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PRESENTED TO
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By
The Society of the New York Hospital,
March, 1898.

Compliments of

"THE STATE BOARD OF HEALTH AND VITAL STATISTICS OF
THE COMMONWEALTH OF PENNSYLVANIA."

BENJAMIN LEE, M. D.,
Secretary

1532 PINE STREET, PHILADELPHIA.

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BENJAMIN LEE, M. D.,

1532 PINE STREET, PHILADELPHIA. Secretary

SIXTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

AND

VITAL STATISTICS

OF THE

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1892

COMMONWEALTH OF PENNSYLVANIA.

Transmitted to the Governor, December 1, 1890.

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RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED IN ITS ANNUAL REPORT, PASSED JULY 2, 1885.

Resolved, That no papers shall be published in the annual report of this board except such as are approved for the purposes of such publication by a majority of the members of the board, and that any such paper shall be published over the signature of the writer, who shall be considered as entitled to the credit of its production, as well as responsible for the statement of facts reported and the opinions expressed therein.

26922

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *December 1, 1890.*

To His Excellency JAMES A. BEAVER, *Governor:*

SIR: In compliance with the provisions of section ten of the act to establish a state board of health for the better protection of life and health and to prevent the spread of contagious and infectious diseases in this commonwealth, approved June 3, 1885, I have the honor to transmit the sixth annual report of the board for the year ending November 15, 1890.

BENJAMIN LEE,
Secretary.

OFFICIAL DOCUMENT, No. 18.

STATE BOARD OF HEALTH

AND

VITAL STATISTICS

OF THE

COMMONWEALTH OF PENNSYLVANIA,

1890.

OFFICERS AND MEMBERS.

PRESIDENT.
PROF. GEORGE G. GROFF, M. D., of Lewisburg.

SECRETARY.
BENJAMIN LEE, M. D., of Philadelphia.

MEMBERS.
PEMBERTON DUDLEY, M. D., Philadelphia.
JOSEPH F. EDWARDS, M. D., Philadelphia.
J. H. McCLELLAND, M. D., Pittsburgh.
HOWARD MURPHY, C. E., Philadelphia.
GEORGE G. GROFF, M. D., Lewisburg.
HON. SAMUEL T. DAVIS, M. D., Lancaster.
BENJAMIN LEE, M. D., Philadelphia.

BUREAU OF REGISTRATION OF VITAL STATISTICS.
Department of Internal Affairs, State Capitol, Harrisburg.

STATE SUPERINTENDENT OF REGISTRATION OF VITAL STATISTICS.
BENJAMIN LEE, M. D.

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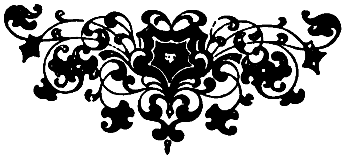


PART I.

REPORT AND MINUTES.

REPORT OF THE SECRETARY.

Professor GEORGE G. GROFF, M. D., LL. D., *President of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania:*

SIR: During the year which has elapsed, since your secretary, in obedience to artice V of the by-laws, made "full report of his official acts," the Board has been steadily prosecuting its important work of educating the public mind in the elementary principles of sanitary reform, and, at the same time, rendering aid to citizens in all parts of the state in their efforts to cope with individual outbreaks of communicable and preventable diseases.

Three regular and three special meetings have been held. The former took place on November 13, 1889, May 8, 1890 and July 10, 1890; and the latter on February 22, May 28 and August 30, 1890.

There has been no change in the composition of the Board. Professor George G. Groff, who, on the withdrawal of Dr. David Engelman from the Board, had been called to fill the vacancy in the presidency *pro tempore*, was, at the regular meeting in July, elected president. It is with pride and gratification that the secretary is able to testify that the cordial relations which have existed between himself and the other members of the Board since its formation continue unimpaired, and that the readiness of each member to co-operate with him in the practical work of the Board, often at the expense of serious loss of time and personal inconvenience, has contributed greatly to its usefulness. He believes that it will not be deemed invidious if he calls attention in this connection to the valuable services rendered by the president and by the chairman of the Committee on Water Supply, Sewerage, Drainage, Topography and Mines, in making special inspections. The chairman of the Committee on Public Institutions and School Hygiene, who went abroad the previous year with credentials from the Board to health authorities in Europe, was cordially received by them and was afforded opportunities for inspecting sanitary works of various kinds. On his return he presented an interesting report of an inspection of the system of water purification in use in the city of Antwerp.

DECLARATION OF ABATEMENT OF NUISANCE IN THE SUSQUEHANNA AND JUNIATA VALLEYS.

In accordance with the instructions of the Board, the secretary, soon after the last annual meeting, addressed a communication to his Excellency the Governor of the Commonwealth, stating officially that the conditions in the valleys of the West Branch of the Susquehanna, the Juniata and the Susquehanna rivers and their tributaries had so improved that there was no longer any ground for state aid, and declaring the nuisance abated.

RESOLUTION OF REGRET AT DR. ENGELMAN'S WITHDRAWAL

The following resolution, passed at the same meeting, was forwarded to Dr. Engelman:

"*Resolved*, That the State Board of Health of Pennsylvania desires to place on record its high appreciation of the value of the services rendered by the Honorable David Engelman, M. D., its late president, both as a member of the Board and as its presiding officer for more than two years.

"Not only his sagacious counsel, but his urbane demeanor and agreeable companionship made his presence welcome at its deliberations. The Board trusts that the severance of his official connection, which it regards with sincere regret, will not lessen the interest of their late colleague in the progress of sanitary reform in the state or deprive the Board of his valuable aid in its prosecution."

POLLUTION OF STREAMS.

The question which has given your secretary the most uneasiness during the past year, and to which he has felt it necessary to call the attention of the Board on several occasions, is that of the pollution of streams by drainage and sewerage. With the rapidly increasing density of population which distinguishes this commonwealth, the question of the disposal of sewage in rural districts and small towns becomes every year more serious.

The whole theory of the modern gospel of sanitation is founded on the belief that man is his brother's keeper; and the whole theory of American freedom is based on the idea that the inherent rights of one man or community to the enjoyment of "life, liberty and the pursuit of happiness" are to be so exercised that they shall interfere with the enjoyment of the same inalienable rights by no other man or community. It needs no argument to prove that the wholesale poisoning of a stream in a populous region does so interfere with the enjoyment of those rights by all who live on its banks, or through whose property it passes, below the point of contamination. Hence the pollution of streams has become one of the most urgent problems with which the sanitarian has to deal. In Great Britian it has led to the establishment of the

"Rivers' Pollution Commission," which has now been in existence for many years, and has spent thousands of pounds in its investigations. It must be remembered that what are there called rivers, would by us often be called runs, brooks or creeks. There are, it is true, few general statutes in this commonwealth bearing on the subject; but it must be borne in mind that, in the language of Judge Thayer, of Philadelphia, in the case of the Commonwealth *v.* Soulas *et al.*, November 25, 1884, "it is a very old and well-settled law that to pollute a public stream is to maintain a common nuisance. It is not only a public injury, but it is a crime, a crime for which those who perpetrate it are answerable in a tribunal of criminal jurisdiction."

The length of time during which such material has been deposited in any one locality, so far from constituting an excuse, only adds to the gravity of the question. The longer the pollution of the soil or of the banks and bed of a water course has been going on, the more complete will be their saturation with organic filth, and the greater the danger. "No length of time (says Judge Thayer in the opinion above alluded to) can justify a public nuisance. * * * * Public rights are not destroyed by private encroachments, no matter how long they have endured. Nor is it any defense that the river is also polluted from other sources. * * * No man can excuse himself for violating the law upon the ground that others violate it. * * * * It is no defense to say that the premises are in the same condition, and the drainage conducted in the same manner as when the defendants obtained possession and began their occupancy. The law is perfectly well settled that no man can prescribe for a public nuisance or defend himself by showing that others have violated the law before him."

The decision given *eo die* (that is, without taking much time to advise or consult, showing that the case was a perfectly clear one to the court), in the case of Albertson *v.* The City of Philadelphia *et al.*, in the court of common pleas, July 15, 1882, established a precedent which no judge will be likely to set aside. In this instance the city of Philadelphia and William Baldwin, commissioner of highways, had contracted to build (under alleged authority of an ordinance of March 7, 1882), and were building a sewer, which was intended to drain into a small stream running through Albertson's lot, and finally emptying into the Schuylkill river. Previously to this time, only pure water had passed through the stream. The proposed sewer would discharge into it fecal and other filthy material from many dwelling houses, the stables of a railroad company, a hospital and an institution of learning. The city was enjoined from using or permitting the said sewer to be used for any purpose other than surface drainage.

It is evident that, if a city which possesses the right of eminent domain and is, by the terms of its charter, especially authorized to construct sewers, can be enjoined from discharging its filth into a small stream running through private property, so much the more can private individuals, hotels, schools, hospitals or jails.

This matter is forcing itself upon the attention of borough authorities, hotel proprietors, mill owners and other employers of large bodies of operators throughout the entire commonwealth. Numerous plans have been suggested for rendering sewage inoffensive and innocuous. These include irrigation both on and under the surface, filtration, precipitation, oxidation and disinfection. One system will be better suited for one location, quite a different one for another.

Your secretary feels that it is not the province of this Board to indicate, save in the most general way, what means should be adopted in any particular instance to attain the desired end. Competent, and thoroughly educated sanitary engineers are now to be found in every large city, whose advice should be sought. It would be well, however, to submit any proposed plans to the Board before they are finally adopted.

Among the complaints of this nature which have reached the Board during the year, several have been due to the disposal of the sewage of public buildings. Recognizing the fact that all state establishments, such as asylums, hospitals, colleges and schools, and all county institutions, such as jails and almshouses, which derive a portion, if not all, of their support from the public funds, are generally looked upon as models by the communities in the midst of which they are placed, the Board felt it to be a matter of importance that such institutions should set the example to municipalities and private individuals of making proper provision for the purification of their sewage before it is permitted to enter any stream. Such establishments often contain within their walls, a population twice as large as that of an ordinary village. But instead of disposing of their filth in small deposits over a large area, they are enabled, by the modern appliances of plumbing, to pour it in a concentrated form into the nearest stream. So far as the health of their own inmates is concerned this is often (not always, as recent investigations of this Board have shown) the best plan. But so far as the health of those who live farther down the streams, and of the domestic animals which pasture along their borders is concerned, it is the very worst plan, and one which civilized communities will not much longer tolerate.

In view of these facts the Board deemed it expedient to instruct the secretary to prepare a circular, addressed to the trustees or other responsible heads of all such institutions throughout the state, representing the gravity of this rapidly growing evil, and earnestly urging that no time be lost in remedying any offensive or dangerous conditions found to exist in connection with the edifices over which they have control.

Such a circular has accordingly been prepared and issued, constituting Circular No. 30.

PURIFICATION OF SEWAGE.

Closely allied with this subject is that of the possibility of the purification of sewage.

In response to an admonition of the Board that the sewage and drainage of their building was a source of serious pollution to a stream, the proprietors of a large summer hotel have introduced, at very considerable expense, an apparatus known as the Rimmer Oxidizer, with the laudable desire of abating the nuisance. On the invitation of the sanitary engineer of the hotel, the Board accompanied the secretary in making a careful personal inspection of the working of this system. While it was evidently accomplishing something towards remedying the offensive character of the outflow, it was still of too recent construction to be able to judge fairly of its merits. The proprietors of the hotel, however, are deserving of commendation for the promptness with which they have responded to the notice of the secretary and their evident desire to spare no expense to free their establishment from the stigma of being a source of annoyance to their neighbors or of injury to the public health.

PURIFICATION OF DRINKING WATER.

So long as water continues to be used as a beverage, so long will the pollution of streams, which are the natural and most reliable sources of drinking water for towns and cities, render the subject of the purification of water supplies one of intense interest to the sanitarian.

Even supposing the millenium to have arrived, when proper laws for the prevention of the contamination of public waters shall be enacted, and strictly obeyed by a regenerated community, with consciences alive to the wickedness of filth, there will still be a certain amount of unavoidable pollution, which will make it advisable to purify a water before drinking it. Allusion has already been made to the report of a member of the Board on a system which has been in successful use for four or five years for purifying the excessively filthy water with which the citizens of Antwerp are supplied. This is known as the Anderson system. It consists briefly in passing the water through a shower of small pieces of metallic iron and then through a filter. On the invitation of the agent for the company in this country, the Board, together with the Boards of Health and of Trade of Philadelphia, made a visit of inspection to Lardner's Point on the Delaware, where a plant has been erected for purposes of demonstration, in order to satisfy themselves as to its efficiency. While not in any sense endorsing it, the secretary feels justified in saying that the members were favorably impressed with what they could see of its workings in their limited time of observation.

PHILADELPHIA THE ONLY CITY IN THE STATE WHOSE WATER SUPPLY IS PROTECTED BY LEGISLATIVE ENACTMENT.

Before leaving this subject it is the duty of the secretary to call attention to the singular fact that the water supply of the city of Philadelphia is the only one in the entire state, so far as he has been able to discover by a diligent examination of the statutes, which the legislature has thought it worth while to protect.

Why the life of a Philadelphian is of so much more value than that of a citizen of Reading or Pottsville, or any other town in the state, in the eyes of our legislators it is difficult to understand.

In a judicious spirit of compromise, however, while extending the ægis of their protection over the milk supply of all smaller cities, they turn a deaf ear to the repeated importunities of the health authorities of the great city to aid them in checking the slaughter of the innocents within her borders, by causing the provisions of this salutary enactment to apply also to cities of the first class. This subject might properly be referred to the consideration of the Committee on Sanitary Legislation.

Very valuable contributions to the question of the purity of water supplies, will be found in the appendices to the reports of the Board for the year 1889 and the present year; in the reports of the State Sanitary Conventions held at Pittsburgh and Norristown. Among them may be mentioned one by Col. Thomas T. Roberts, chief engineer of the Monongahela Navigation Company, on the "Future of our Rivers as Sources of Water Supply," and one by Dr. C. W. Chancellor, secretary of the State Board of Health of Maryland, on "The Purification of Water Supplies." The State Board of Health of Massachusetts, with the aid of a liberal appropriation from the legislature, is engaged upon a series of elaborate and comprehensive experiments on the purification of sewage and of potable waters which will undoubtedly produce very valuable practical results. One of the facts at which the committee appear to have arrived may be stated for the benefit of those whose faith in the benefits of filtration has been shaken by the statements of amateur microscopists. It is this: That the presence of a certain quanitity or number of harmless, or, as they may even be termed, benevolent, bacteria in a filter-bed so far from rendering a water injurious to the health, positively adds to its purity.

EPIDEMICS.

The only wide-spread epidemic which has visited the state has been that of influenza, which in itself will render the year a memorable one. Reaching our shores from Europe about December 10, the first cases were reported in the city of Philadelphia about the 20th of that month. The disease began to appear as a factor in the mortality tables of the city on the fourth day of January, when one death is recorded from the disease. An increase in the number of deaths from inflammation of the lungs, however, from thirty-three in the week previous to seventy-one in the first week in January, sufficiently indicates that the epidemic had become fairly seated. It spread with a rapidity which is scarcely conceivable, and gained in intensity as the numbers of its victims increased. By the 23d of December, it was estimated that there were two thousand cases in the city. On the 9th of January six thousand of the pupils of the public schools were reported as prostrated with the disease. The number of deaths increased the first week in January from 404 in the week previous, to 492. In two weeks it reached the startling figure of seven hundred and seventy, more than twice as great as the mortality of the corresponding week of the year 1888. The overworked physicians were prostrated both by fatigue and by the disease itself, and many succumbed finally and entered into rest.

Business was now almost at a standstill. In several instances places of business or manufacture were compelled to close for want of hands. Whole families were confined to the bed at once, so that neighbors were obliged to provide them with food and nursing care. This week, ending January 18, marked the high tide of the pestilence so far as mortality was concerned, the city death rate having fallen to its norm by the end of February. In the meantime the epidemic influence had spread like wild-fire, literally "on the wings of the wind," throughout the entire state. On the 27th of December the disease was rife in Lancaster, and genuine cases had appeared in Pittsburgh on the extreme western border, and Wilkes-Barre on the northern border of the state.

It is probable that not a single individual entirely escaped its pernicious effects. Its manifestations were so various, affecting in one the bronchial tubes, in another the nervous system, now the brain and now the bowels, here peritonitis and there pneumonia, that it was a long time, comparatively, before physicians, even, recognized it in its protean forms. It is scarcely conceivable that a disease which spreads with such astonishing rapidity, goes through the process of re-development in each person infected and is only communicated from person to person or by infected articles. And yet this theory has been maintained by a few authorities who claim that it is always more prevalent along lines of travel and that it did not progress more rapidly than modern means of communication would enable it to do.

Whatever theory we may adopt of its means of propagation, it was felt by your secretary that, an affection so fatal in its results and so wide-spread in its domain possessed an importance which entitled it to especial study. He therefore prepared the following circular, cyclostyle copies of which, to the number of seven thousand, were distributed to the members of the medical profession throughout the state:

DEAR DOCTOR: I am desirous to obtain reliable statistics in regard to the recent pan-demic of influenza as observed in this state; will you, therefore, kindly furnish the information called for below, by filling up the blanks from the data in your visiting list or note book and returning the sheet to me as early as practicable?

Yours very respectfully,
(Signed) BENJAMIN LEE, M. D.,
Superintendent of Vital Statistics.

Residence		county			
Date of first case					
Number of cases		adults	......	children	....
Predominant type	(nervous)	"	......	"	....
" "	(catarrhal) ..	"	......	"	....
" "	(inflammatory)	"	......	"	....
Number of deaths	(directly caused)	....			
" " "	(indirectly ")	....			
Immediate cause of death:					
Bronchitis		adults	......	children	....
Pneumonia		"	......	"	....
Phthisis		"	......	"	....
Nervous affections........		"	......	"	....

Up to the first of May, four thousand five hundred of these letters had been sent out.

The following is an analysis of the results obtained at that date:

Number of physicians reporting,	265
Number of cases,	37,275
Adults,	26,302
Children,	10,973
Number of cases nervous,	6,913
" " " catarrhal,	16,434
" " " inflammatory,	5,829
Number of deaths directly caused,	56
" " " indirectly caused,	205
Immediate cause of death, bronchitis,	8
" " " " pneumonia,	117
" " " " phthisis,	42
" " " " nervous,	21

Supposing, which there is no reason to doubt, that the two hundred and sixty-five physicians who replied, represent a fair average of the practitioners of the state, this would give us 88,416 persons as having been sufficiently ill with the disease to demand medical aid. We know that there were many who suffered mild attacks who never sought advice, and many more whom physicians, in their excessive haste, never entered on their visiting lists, although they may have prescribed for them.

The Board has aided the local authorities in their attempts to suppress local epidemics of typhoid fever in fourteen instances, and of diphtheria in twelve instances.

TYPHOID FEVER.

Those of typhoid fever could, in every instance, be traced directly to the use of polluted water, generally from wells. In that of Lock Haven a connection seemed to be traceable between the floods of the previous summer as affecting the reservoir and the supply pipes and the existence of the disease.

DIPHTHERIA.

Diphtheria has invariably been found in the midst of conditions of the greatest filth, and has been distinctly propagated by gross disregard of sanitary regulations, especially in the matter of public funerals.

PUBLIC FUNERALS IN CONTAGIOUS DISEASES.

So strongly has this last fact impressed the Board that the secretary was authorized to issue two circulars, one addressed to the clerical profession throughout the state, earnestly requesting its members to discourage the practice of holding public or church funerals in the cases of persons who have died of contagious or infectious diseases, more particularly of diphtheria, scarlet fever and measles; and another to undertakers and funeral directors warning them of this danger and also urging the adoption by them of certain precautions in the preparation of such bodies for burial, the conduct of the funeral and subsequent disinfection of vehicles and apartments.

The former of these has been printed and already widely circulated. The latter has been prepared and is now submitted to the Board for its consideration, as it involves points of considerable importance.

The epidemic of diphtheria in Delaware county is so widespread and persistent, and the conditions so unusually detrimental to health, that the secretary has deemed it necessary to issue the following proclamation in the name of the Board:

EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *November* 4, 1890.

PROCLAMATION.

In consequence of an inspection, made on the 27th day of October, 1890, by the medical inspector of the Delaware district, the State Board of Health hereby declares diphtheria to be epidemic in the township of Middletown, Delaware county, including the villages of Glen Riddle, Lima, Parkmount and Lenni, and in the township of Ashton, Delaware county, including the villages of Crozerville, Rockdale and Village Green.

In the absence of any local health authorities in these townships, the Board establishes the following

Regulations.

First. There shall be no public or church funeral of any person who has died of diphtheria, or of any person who has died of any other disease in a house in which diphtheria was present at the time of such death.

Second. The body of any person who has died of diphtheria shall not be exposed to view. Such body shall be, immediately after death, wrapped in a sheet which has been soaked in a solution of corrosive sublimate, in the proportion of two drachms to the gallon of water, and privately buried within twenty-four hours.

Third. No person shall unnecessarily visit any house in which diphtheria is known to exist or has existed within a period of six weeks.

Fourth. No member of a family in whose house diphtheria exists should attend school, Sunday-school, church, theatre or any other public assembly.

Fifth. Every school, among members of which there have been cases of diphtheria, should be closed; and no child should be received into a non-infected school who has been attending one among the pupils of which the infection is known to have existed.

Sixth. No persons recently recovered from an attack of diphtheria, or in whose family diphtheria exists, shall go to work in any factory or mill in which their work requires them to be in close contact with their fellow workmen in confined rooms, without a certificate from their attending physician stating that in his opinion they run no risk of conveying the contagion.

Seventh. The period during which a person who has had diphtheria is in danger of conveying the contagion is from four to six weeks.

Eighth. All rooms and houses in which diphtheria has occurred, and all clothing, bed clothing and articles of furniture which have been exposed to infection should be disinfected in accordance with the subjoined instructions.

Ninth. No dead animal, garbage or filth of any kind shall be thrown into any stream, race, dam, pond or other water, or upon any public road or place. All such material should be either burned or buried.

Tenth. All cellars should be thoroughly cleaned and whitewashed, and all house yards and privies disinfected with copperas, and kept clean.

Note. The State Board of Health has "power and authority to order the cause of any special disease or mortality to be abated and removed." Any person who shall fail to obey or shall violate such order, becomes liable to a fine of $100.00 for each such act of neglect or violation.

The circulars of the Board, (No. 19, Precautions Against Diphtheria, and No. 29, on the Dangers Arising from Public Funerals of those who have died from Contagious and Infectious Diseases) can be obtained of the minister of the Calvary Church at Lenni, of Doctor Morton P. Dickinson, of Glen Riddle, or by addressing Benjamin Lee, M. D., secretary of the State Board of Health, 1532 Pine street, Philadelphia.

To this proclamation were appended careful instructions, taken from the circulars of the Board as to disinfectants and the mode of using them.

SMALL-POX.

Small-pox has appeared only in three places, namely, Pittsburgh, Canonsburg, Washington county, and Glen Lyon, Luzerne county, and by the prompt action of the state or local authorities has, in each instance, been at once crushed out.

LEPROSY.

Leprosy has occurred in two cities, Philadelphia and Chester Both cases were promptly isolated by the local health boards and are under strict surveillance. The secretary has addressed a communication to the Surgeon General of the U. S. Marine Hospital Service, suggesting that in accordance with the new regulations of that service, inasmuch as the patient is not a naturalized citizen of the United States, he be extradited to his native country, Sweden, where he could be comfortably cared for, in a leper colony, and where he could enjoy the society of his fellows, instead of enduring the torture of solitary confinement.

In view of the rapid spread of this disease, both in the East and West Indies, during the last decade, it will undoubtedly become necessary at no distant period either for the United States to found leper colonies or for each large city to establish its leper house. The former plan is evidently the more practical and rational. At the National Conference of State Boards of Health which met in Nashville in the month of May, your secretary suggested that the United States should, either by purchase or cession, obtain possession of three tracts of land, one in the northwest, one in Louisiana and one in California, already to some extent occupied by lepers, and establish thereon as many colonies, to the nearest of which every leper discovered should be removed and on which he should be detained, with every provision for his comfort, until death should come to his relief. At the meeting of the American Public Health Association in the city of Brooklyn, in October, 1889, which your secretary and Dr. Edwards attended as delegates, the former presented a resolution at the close of a paper detailing the results of his observation of leprosy in the island of Cuba, which read as follows:

"*Resolved*, That this Association, recognizing the admirable precautions taken by the United States Marine Hospital Service and by the State Board of Health of Florida to prevent the introduction of yellow fever into this country, respectfully request Supervising Surgeon General Hamilton, of the United States Marine Hospital Service, the Honorable the State Board of Health of Florida, and all quarantine commissioners of ports having intercourse with Cuban ports, to exercise the same vigilance with regard to leprosy that is already observed in the case of yellow fever during what is known as the quarantine season.

"*Resolved*, That the secretary be instructed to transmit copies of the above resolution to the several officials therein indicated."

The resolution was adopted and forwarded as directed. In compliance with this request the following circular was issued by the Treasury Department of the United States:

CIRCULAR

Regulation to prevent the Introduction of Leprosy.

1889
Department No. 130.

TREASURY DEPARTMENT.
OFFICE SUPERVISING SURGEON GENERAL, MARINE HOSPITAL SERVICE,
WASHINGTON, D. C., *December* 23, 1889.

To the Medical Officers of the Marine Hospital Service, Collectors of Customs and others concerned:

The national quarantine act, approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases," provides that no vessel or vehicle coming from any foreign port or country where any contagious or infectious disease exists, or any vessel or vehicle conveying persons or animals affected with any contagious disease, shall enter any port of the United States, or cross the boundary line between the United States and any foreign country, except in such manner as may be prescribed.

Attention is now directed to the increased prevalence of the contagious disease known as leprosy in several foreign countries, and the danger of its increase in the United States through the immigration of persons affected with leprosy, and by direction of the Secretary of the Treasury the following regulation is framed under authority of the foregoing act, subject to the approval of the President, to protect the people of the United States from the introduction of leprosy:

1. Until further orders no vessel shall be admitted to entry by any officer of the customs until the master, owner, or authorized agent of the vessel shall produce a certificate from the health officer or quaran

tine officer at the port of entry, or nearest United States quarantine officer, that no person affected with leprosy was on board the said vessel when admitted to free pratique, or in case a leper was found on board such vessel, that he or she with his baggage has been removed from the vessel and detained at the quarantine station.

2. Medical officers in command of United States quarantines are hereby instructed to detain any person affected with leprosy found on board any vessel, but such officer will permit the departure on outgoing vessels of persons detained at quarantine in pursuance of this regulation, provided such vessel shall be bound to the foreign country from which the said leper shall have last sailed.

JOHN B. HAMILTON,
Supervising Surgeon General Marine Hospital Service.

Approved,
WILLIAM WINDOM, *Secretary.*

Approved,
BENJ. HARRISON.

The anxiety which is felt upon this subject in California, which is in intimate communication with leprosy-breeding centers, is sufficiently indicated by the following resolution adopted by the State Board of Health of that state, which was forwarded to the secretary in the early part of this year:

DEAR SIR: At a regular meeting of the State Board of Health of the State of California, held January 11, 1890, it was

"*Resolved*, That the California State Board of Health recommend that the Congress of the United States do enact a statute,

"*First.* That no person affected with leprosy should be permitted to enter the United States.

"*Second.* That every person immigrating to the United States from any place where leprosy prevails shall procure a certificate from a competent physician, properly attested by some United States consul or health officer, certifying that he or she is not affected with leprosy, is not a descendant from a leprous family, and has no relations in the collateral line who are lepers.

"*Third.* That every immigrant coming to the United States who has sojourned or resided where leprosy prevails shall be reported to the board of health of the state of his destination, so that he may, during his residence in the United States, be inspected not less than twice each year by some competent physician or person appointed by the health authorities of the place wherein he resides for a period of ten years.

"*Fourth.* That the penalty for the violation of the first two sections of this statute shall be the immediate return of such person to the place from whence he or she came.

"*Resolved*, That the California representatives in Congress be and they are hereby earnestly requested to vote for the enactment of such a statute, and that the Secretary of this Board be instructed to furnish said Congressmen a copy of these resolutions, duly signed by the president and attested by the secretary."

HENRY S. ORME, M. D., *President.*

G. G. TYRRELL, M. D., *Secretary.*

CHOLERA ON THE MEDITERRANEAN AND SPANISH RAGS.

At the regular meeting of the Board in July the secretary reported as follows, in reference to the prospects of the arrival of cholera from Spain:

The appearance of Asiatic cholera almost simultaneously at six different points in Spain, covering a distance of two hundred and fifty miles in a straight line and probably four hundred by rail, indicates a very considerable survival of germs of that disease from last summer along the shores of the Mediterranean. Their wide dissemination and early maturity make a grave epidemic in that region, and it may be in southern Europe generally, probable. We, in this country, have little to fear, however. Our quarantine stations, national, state and municipal, were never so well equipped before. That of the port of New York, which is our most vulnerable point, is fully twice as well prepared as it was when it so successfully checked the invasion of the disease at the threshold, three years ago. Philadelphia, the next most likely point of attack, has a double line of intrenchments, the Lazaretto, or municipal quarantine station, twelve miles down the Delaware river, and the United States quarantine station, eighty miles below, at Cape Henlopen. The latter is provided with a fumigating steamer, just finished, which is capable of disinfecting the largest vessel in a few hours.

The Baltimore station is well equipped and under intelligent management, and suspected vessels for that port as well as for Norfolk are also detained at Cape Charles by the U. S. Marine Hospital Service. The efficiency of the New Orleans quarantine has been frequently demonstrated. Its plant is the most complete and most scientifically constructed of any in the country. Should the disease pass these barriers, however, its mode of propagation is now so thoroughly understood that it will be a reproach to local health authorities if it is not at once stamped out.

It is their duty immediately to put their cities and towns into such a condition of cleanliness, that the germs will find no congenial soil. The secretary has in preparation a new circular on this subject, which will shortly be issued.

Since making the above report, the disease has extended somewhat and still exists in Valencia and neighboring provincs. The conservative "Local Government Board of Great Britain," has considered the condition of sufficient gravity to lead it to modify its somewhat lax regulations in regard to quarantine, an order to that effect having been issued August 30.

This was followed, upon the fourth of September, by the issue of regulations forbidding the importation of rags from Spain until the thirty-first day of December, 1890. The period of danger from this source in our own country is not until an epidemic abroad has existed for many months. It may be said to be just now beginning. The secretary, therefore, suggests the passage of a resolution calling upon the board of health of the city of Philadelphia to prohibit the importation of rags from any Spanish port, or of rags which there is reason to suppose have been gathered in Spain, from the first day of December, 1890, to the first day of December, 1891. The secretary has already had a personal conference with the health officer of Philadelphia upon the subject, calling his attention to the action of the English authorities.

NOTIFICATION OF TYPHUS FEVER IN THE PORT OF NEW YORK.

On the sixth of January the following letter was received from the Secretary of the New York State Board of Health:

STATE BOARD OF HEALTH OF NEW YORK,
ALBANY, *January* 6, 1890.

SIR: Six cases of typhus fever, occurring among immigrants who arrived in New York the 5th of December last, in the steamship "Westernland," are reported from New York city. I send you a list of the steerage passengers of the "Westernland" who have scattered in various directions. The places to which they were booked could not be obtained. In case of typhus fever breaking out in your jurisdiction, it was thought the list might be an aid.

Very respectfully,
Your obedient servant,
LEWIS BALCH,
Secretary.

To Secretary State Board of Health of Pennsylvania.

The list referred to contained 284 names. Copies of the same were made and sent to the boards of health of all the large cities in the state, with the request that all newly-arrived immigrants be closely watched for indications of the disease.

PROPOSED WATER SUPPLIES OF TOWNS.

In compliance with the instructions of the Board, a communication has been addressed to the authorities of the borough of Muncy advising them to be cautious about accepting a new water supply, which a member of the Board had found, upon personal inspection, to have its sources in an agricultural water shed, and to be in danger of serious pollution.

At the request of prominent citizens of Berwick, Columbia county, an inspection was made by Dr. Leiser, medical inspector of the Northumberland district, of a proposed new source of water supply. The report showed certain objectionable features, which, however, might be removed by proper precautions. A copy of the report was forwarded to the petitioners.

OLD CANAL BEDS.

Frequent complaints reach the Board of nuisances created in small towns by collections of stagnant water in the beds of old canals which have fallen into a "desuetude" the reverse of "innocuous." This is especially true of the old state canal and of portions of the Schuylkill Navigation Company's canal. The right of the state to leave such a source of disease unremedied may well be questioned. Some general system of drainage should be adopted which would either dry up these malaria breeding ditches or keep streams of clean water running through them.

DOES THE HABIT OF TOBACCO SMOKING RETARD OR PREVENT THE DEVELOPMENT OF PULMONARY CONSUMPTION?

At the request of the Board the following circular has been widely distributed among physicians.

STATE BOARD OF HEALTH OF PENNSYLVANIA,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *March* 10, 1890.

DEAR DOCTOR: The State Board of Health is desirous of obtaining authentic information as regards the effect of tobacco smoking, either in promoting or retarding the development of pulmonary tuberculosis or consumption. It has been stated that inveterate smokers are, to a great extent, exempt from the disease. If this is true the fact ought to be made widely known. If it has no foundation it ought to be authoritatively contradicted. The Board has, therefore, instructed me to address you this communication asking if you will kindly forward, at as early a date as convenient, the results of your own observation and experience in regard to this subject.

Yours very truly,
(Signed) BENJAMIN LEE,
Secretary.

The entire indifference with which this circular was received may safely be regarded as an indication that such a theory has no hold upon the minds of the profession in general. Only about two hundred replies were received. Of these fifty-six were affirmative of the belief that inveterate tobacco smoking does sometimes act as a preventive. One hundred and nine scouted the idea, and thirty-five were non-committal. On the face of the returns, therefore, the "nays have it." The decision is, however, stronger than the mere numerical showing, as many of those who considered tobacco smoke a prophylactic, acknowledged a strong personal bias in favor of the habit: and there was also much more positiveness in the tone of those who disbelieved in its efficacy. So far, therefore, as the investigation has had a value, it has tended to prove that there is no real scientific foundation for the theory.

THE CONEMAUGH DISTRICT.

A new inspection district has been formed, comprising the counties of Cambria, Westmoreland, Indiana and Armstrong. These counties previously formed a portion of the Central and the Western Slope districts, which were both very large and, in parts, difficult of access. Dr. W. E. Matthews, of Johnstown, who so faithfully and acceptably discharged the duties of chief deputy medical inspector in charge of the sanitary corps of the State Board of Health at Johnstown, during the operations for the renovation of the site of that ruined city, has been appointed medical inspector to the new district.

SPECIAL INSPECTOR ON THE PENNSYLVANIA RAILROAD.

At the request of the Pennsylvania Railroad Company, Dr. E. C. Town, a company surgeon, has been appointed special inspector to the Board, with authority to burn bundles of filthy clothing, rags, etc., suspected of danger of conveying infection, left upon the premises or in the stations of the Company, reporting such action to the Board.

SANITARY CONVENTIONS AND CONFERENCES.

The secretary has attended, as delegate from this Board, the following meetings, viz: those of the Tri-State Sanitary Convention at Wheeling, West Virginia; of the National Conference of State Boards of Health at Nashville, Tennessee, and of the Section on State Medicine of the American Medical Association.

TRI-STATE SANITARY CONVENTION.

On the twenty-eighth day of February, the secretary represented the Board at the meetings of the Tri-State Sanitary Convention at Wheeling, West Virginia, occupying the chair in the absence of the president, Dr. Harvey Reed, who was detained at home by illness. The special object of this convention was to consider the problems presented to sanitarians by devastating floods. Many interesting papers were presented, several of them founded on the experience of the writers in the

Johnstown disaster. The programme of the convention and papers read as published in the Annals of Hygiene are herewith submitted.

NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH.

This body is composed entirley of executive officers of Boards of Health of states and provinces in the United States and the Dominion of Canada. It possesses, therefore, an official character which gives its deliberations great importance and its action an executive weight. Sanitary regulations thus become, to a considerable extent, uniform throughout the continent, and the different Boards aid one another in their enforcement. As chairman of a committee, your representative read a report on the subject of the spread of leprosy in its relation to the United States, showing that during the past ten years this loathsome disease has been making rapid progress, and that it behooves the sanitary authorities of the country to be on the alert to prevent its gaining a foothold here. The following resolution offered by him was passed:

"*Resolved*, That it is the sense of this conference that all state and local boards of health should keep all cases of leprosy existing in their respective districts under surveillance, and should require physicians to report all cases of the disease which may come to their notice."

The following resolution offered by your Secretary was also passed:

"*Resolved*, That this conference respectfully urges upon the subcommittee on forestry of the committee on public domains of the Congress of the United States to pass such laws as shall check the reckless destruction of trees on public lands."

A full report of the proceedings of the conference is herewith submitted.

SECTION ON STATE MEDICINE.

The Section on State Medicine of the American Medical Association was presided over by Supervising Surgeon General John B. Hamilton, of the U. S. Marine Hospital Service. This officer has charge of the entire quarantine establishment of the country, and his selection as presiding officer was therefore a very fitting one.

One of the most interesting papers read before this section was by Dr. Henry G. Baker, Secretary of the State Board of Health of Michigan, on the History and Causation of the Influenza Epidemic.

It is a significant fact that the president of the association chose for his theme, not some practical subject connected with medicine or surgery, but "The Relation of Hygiene to the Government." In this connection the attention of the Board is called to the following important

CIRCULAR.

Inter-State Quarantine Act.

1890
Department No. 18.

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON-GENERAL,
U. S. MARINE HOSPITAL SERVICE,
WASHINGTON, D. C., *March* 29, 1890.

To Medical Officers Marine Hospital Service, Officers State Boards of Health, and others concerned:

The following act of Congress, approved March 28, 1890, is hereby published for the information of the persons to whom this circular is addressed.

JOHN B. HAMILTON,
Supervising Surgeon-General.

Approved,
WILLIAM WINDOM,
Secretary.

AN ACT

To prevent the introduction of contagious diseases from one state to another, and for the punishment of certain offenses.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That whenever it shall be made to appear to the satisfaction of the President that cholera, yellow-fever, small-pox or plague exists in any state or territory, or in the District of Columbia, and that there is danger of the spread of such disease into other states, territories or the District of Columbia, he is hereby authorized to cause the Secretary of the Treasury to promulgate such rules and regulations as in his judgment may be necessary to prevent the spread of such disease from one state or territory into another, or from any state or territory into the District of Columbia, or from the District of Columbia into any state or territory, and to employ such inspectors and other persons as may be necessary to execute such regulations to prevent the spread of such disease. The said rules and regulations shall be prepared by the Supervising Surgeon General of the Marine Hospital Service, under the direction of the Secretary of the Treasury. And any person who shall wilfully violate any rule or regulation so made and promulgated shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years, or both, in the discretion of the court.

SECTION 2. That any officer, or person acting as an officer or agent of the United States at any quarantine station, or other person employed to aid in preventing the spread of such disease, who shall wilfully violate any of the quarantine laws of the United States, or any of the rules and regulations made and promulgated by the Secretary of the Treasury as provided for in section one of this act, or any lawful order of his superior officer or officers, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than three hundred dollars or imprisonment for not more than one year, or both, in the discretion of the court.

SECTION 3. That when any common carrier or officer, agent, or employé of any common carrier shall wilfully violate any of the quarantine laws of the United States, or the rules and regulations made and promulgated, as provided for in section one of this act, such a common carrier, officer, agent, or employé shall be deemed guilty of a misdemeanor, and shall, upon conviction, be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years, or both, in the discretion of the court.

Approved March 28, 1890.

THE FOURTH STATE SANITARY CONVENTION

Was held at Norristown, May 9 and 10, and was presided over by the Hon. Thomas J. Stewart, Secretary of Internal Affairs, assisted by their Honors Judges Weand and Schwartz. The attendance was large, the speakers able and the papers of great interest. The annual address was delivered by Mr. A. Arnold Clarke, of Lansing, Michigan, and was a lucid and forcible exposition of the germ theory of disease. The learned professions of Norristown all contributed representative men to the discussions. The proceedings will form a volume of no little value to the sanitarian.

REGISTER OF PHYSICIANS.

As superintendent of vital statistics, the secretary, has issued the first official "Register of Physicians in Pennsylvania by Counties," a volume of 425 pages, giving the date of registration, full name, sex, place of birth, residence, medical degrees, institutions and dates, other degrees, institutions and dates, place or places of continuous practice since 1871 of those having no diploma, and removals and deaths as nearly as can be ascertained, of every physician in the state. In the work of revision and proof reading of this immense list the secretary has availed himself of the services of Professor William B. Atkinson, medical inspector to the Board for the Delaware district, whose long familiarity with the profession throughout the state, in the capacity of secretary of the State Medical Society, has peculiarly fitted him for the task.

The secretary desires it to be understood that in publishing this list of the practitioners of medicine and surgery he does not, in any way, endorse the character of those whose names appear. He simply records the fact that these persons have registered. There has been considerable laxity on the part of the registration officers. The law has not always been fully understood, and, in some instances, even where it has, its requirements have been slighted.

There are many names recorded of persons holding diplomas from those infamous *bogus* faculties which disgraced Philadelphia some years since. In many instances the prothonotary had no choice but to admit these pretenders to registration, the charters of the colleges (so-called) not having been revoked at the time the diplomas were purchased. In each instance, however, the name of the college from which the physician was graduated is given, or, in case he possesses no diploma, the length of time during which he has been in continuous practice at the time of the passage of the act of 1881. To this the secretary has thought it well to add a list of the colleges from which the physicians of the state have received their credentials, noting each case in which there has been a taint of fraudulence. This will enable the public to be somewhat on their guard.

It will be noted that the number reported in the tables of comparison is less than that given in the general list. This is owing to the fact that those tables were prepared by the Secretary of Internal Affairs, whose report was published much in advance of our own, and that a considerable number of delinquent counties have since reported. Many corrections also require to be made for deaths and removals. The value of this register is therefore mainly that it forms a broad, and, in the main, correct basis for future work which will result in the completion, at no distant date, of one which shall be complete and accurate. Any one who is in the habit of making deductions from tables, figures and statistics knows how voluminous the manuscript of such work becomes, and how much easier these records are to manipulate when reduced to print. In the following list it is to be understood that all colleges not annotated have an actual and legal existence so far as the Board has been able to ascertain:

NAMES OF COLLEGES AND NUMBER OF GRADUATES FROM EACH COLLEGE.

Jefferson Medical College of Philadelphia,	2,009
University of Pennsylvania,	1,945
Hahnemann Medical College of Philadelphia,	470
Woman's Medical College of Pennsylvania, Philadelphia,	140
Bellevue Hospital Medical College of New York,	203
Western Reserve Medical College of Ohio,	176
College of Physicians and Surgeons of Baltimore, Md.,	196
University of Michigan,	112
University of New York,	117
Pennsylvania Medical College (extinct),	122
Cincinnati Medical College (Medical College of Ohio),	101
University of Maryland,	101
Homeopathic Medical College of Pennsylvania, Philadelphia,	95

Medico-Chirurgical College of Philadelphia,	64
University of New York City,	69
Eclectic Medical College of Philadelphia (became fraudulent, extinct),	91
Homeopathic Hospital College of Cleveland, Ohio,	63
American University of Pennsylvania. Philadelphia (fraudulent, extinct),	63
Cleveland Medical College (Western Reserve),	53
Philadelphia Medical College (extinct),	48
Medical College of Worcester, Massachusetts (extinct),	44
University of Medicine and Surgery of Philadelphia (fraudulent, extinct),	59
College of Physicians and Surgeons of New York,	29
Baltimore Medical College,	49
Long Island College Hospital,	38
Eclectic Medical College of New York City,	49
University of Vermont,	25
Ohio Medical College,	38
University of Kentucky,	19
Berkshire Medical College of Massachusetts (extinct 1887),	13
College of Physicians and Surgeons of Maryland,	12
Royal College of Physicians and Surgeons, Canada,	16
Homeopathic Medical College of New York,	15
Homeopathic Medical College of Chicago,	17
Physico Medical Institute, Cincinnati (extinct 1880),	14
Eclectic College of Medicine and Surgery of Ohio (Eclectic Medical Institute),	16
Dartmouth Medical College of New Hampshire,	11
Pulte Medical College of Cincinnati, Ohio,	17
Columbia, of District of Columbia,	12
Howard University of District of Columbia,	12
Starling Medical College of Ohio,	17
Albany Medical College, New York,	24
University of Buffalo, New York,	67
Miami Medical College of Ohio,	48
Castleton Medical College of Vermont (extinct 1854),	10
Rush Medical College, Illinois,	22
Geneva Medical College (Syracuse University, New York),	17
American Medical College of St. Louis (eclectic),	15
Washington University of Baltimore (College of Physicians and Surgeons),	10
Queen's University of Ireland,	11
University of Heidelberg, Germany,	6
Royal College of Surgeons of England,	3
Medical Department, University of Georgetown, D. C.,	9

University of Nashville,	4
University of Geissen, Germany,	7
College of Physicians and Surgeons of Iowa,	7
College of Physicians and Surgeons of Missouri,	5
University of Georgia (Medical Department),	7
Willoughby University of Ohio,	7
Boston University (fraudulent, extinct),	4
Hygeo-Therapeutics College of New Jersey (extinct),	8
University of Hudson,	8
United States Medical College, New York (eclectic, illegal, extinct),	8
College of Medicine and Surgery of Baltimore,	9
Detroit Medical College,	8
Medical College of Columbus, Ohio,	6
National, D. C. (Medical Department of Columbian University),	4
Harvard Medical College,	7
College of Physicians and Surgeons of Chicago,	7
Medical Department of Yale College, Connecticut,	9
New York Medical College (merged into Bellevue Hospital Medical College),	7
Charity Hospital Medical College, Ohio,	6
Bowdoin Medical College, Maine,	6
University of Glasgow, Scotland,	8
Royal College of Medicine of Edinburgh, Scotland,	9
University of Wurtzburg, Germany,	9
University of Berlin,	7
University of Vienna,	7
University of Jena, Germany,	6
Woman's Medical College of Germany (fraudulent),	7
Albert Medical College of Canada,	4
University of Kœnigsberg, Germany,	4
McGill University of Montreal, Canada,	4
Columbian Medical College of Michigan,	4
Columbia of New York (College of Physicians and Surgeons),	6
Homeopathic Medical School of Massachusetts (Boston University),	4
Metropolitan of New York (extinct),	4
Homeopathic Medical College of Missouri,	4
Franklin Medical College,	3
Medical Department of Victoria College, Canada (extinct),	3
Bolomedico Generale, Nicaragua,	3
University of Keeskenell, Russia,	3
Evansville Medical College of Indiana (suspended),	3
University of Marburg,	2

University of Amsterdam,	2
Hoscomic Insulaa Longa,	2
Germania Medical College of Austria (fraudulent),	2
State University of Iowa,	2
Chicago Medical College,	2
University of Erlingen, Germany,	2
University of Padua, Italy,	2
University of Coburg, Canada,	2
University of Stuttgart, Germany (fraudulent),	2
University of Indiana (fraudulent, extinct),	4
Bennett College of Eclectic Medicine and Surgery, Ill	2
Virginia University	2
Syracuse Eclectic Medical College of New York (extinct)	2
New York Ophthalmic Hospital	2
College of Medicine and Surgery of Keokuk, Iowa	2
Julio Hospital College	2
Royal College of Physicians and Surgeons of Ontario, Canada	2
Fairfield Medical College of New York (extinct 1840)	1
Eclectic Medical College of Atlanta, Georgia	1
Pacific Medical College	1
University of Tennessee	1
Eclectic of New Jersey	1
University of Louisiana	1
Medical College of South Carolina	1
University of Gratz, Austria	1
University of Breslau, Prussia (fraudulent)	1
University of Munich, Bavaria	1
Ac. Maximilian	1
University of Basel, Switzerland	1
Medical College of Virginia	1
Toledo Medical College	1
New York Medical College for Women	1
Reformed Medical College of New York (eclectic, extinct)	1
Manchester Medical College, New Hampshire (fraudulent, extinct)	1
Savannah Medical College (extinct 1880)	1
Indiana Medical College	1
Academica Ludovicenia	1
University of Freyburg, Switzerland	1
College of Augsburg (fraudulent)	1
University of Naples	1
University of Herford, Prussia	1
Institute of Midwifery	6
Total,	7,315

Nationality of Physicians of Foreign Birth in Pennsylvania.

The returns fail to show the place of birth of many of the physicians. Of the 8,248 reported, 641 are of foreign birth. The following table gives the number of foreign born, and shows the number of each nationality:

Germany	131	Austria	5
England	153	South America	2
Ireland	100	Baden	2
Canada	58	New Brunswick	2
Scotland	32	Bavaria	2
Prussia	27	Mexico	1
Wales	24	Romania	1
France	19	Turkey	2
Switzerland	14	Island of Malta	1
Nova Scotia	7	Isle of Man	1
Russia	7	Brazil	1
Cuba	7	Prince Edward's Island	1
Sweden	5	Bermuda	1
West Indies	4	Australia	1
Italy	5	Jerusalem	1
Poland	4	Geneva	1
Hungary	4	Bohemia	1
Nicaragua	3	Belgium	1
India	3	Iceland	1
Holland	3		
Saxony	3		641

It will be seen from this table that of the 641 foreign born physicians, Great Britain is the birthplace of 152 and Germany of 131. The registration indicates that 7,316 are graduates of medical colleges, 2,009 being among the alumni of Jefferson Medical College, and 1,945 among the alumni of the University of Pennsylvania. The returns further show that there are 932 physicians without diplomas, who are now practicing under the provisions of the fifth section of the act of 1881, which allowed those who had been in constant practice for ten years to continue without certificates of graduation. Of 8,248 reported, 7,932 are males and 316 females. In the counties of Allegheny and Erie about nine per centum of the physicians are females.

Distribution of Physicians by Counties.

The following table shows (in each county) the number of persons to each physician, the number of male and female physicians, the number practicing without diplomas, the number who are foreign born and the total number registered:

	Number of persons to each physician in each county.	The number of male physicians.	The number of female physicians.	The number practicing without diploma.	The number who are foreign born.	The total number registered.
Allegheny,	677	431	44	100	135	525
Armstrong,	554	85	1	5	5	86
Beaver,	404	97	1	20	6	98
Bedford,	17,464	2	. . . .	. . . .	2	2
Berks,	371	320	10	53	22	330
Blair,	398	129	3	4	7	132
Bradford,	321	175	7	43	1	182
Butler,	530	98	1	14	2	99
Cameron,	322	16	. . . .	2	1	16
Centre,	499	76	. . . .	. . . .	. . . .	76
Chester,	488	164	7	25	13	171
Clearfield,	353	122	1	24	1	123
Columbia,	450	71	1	1	1	72
Crawford,	406	160	9	38	8	169
Cumberland,	370	123	1	15	4	124
Dauphin,	382	194	5	21	8	199
Delaware,	637	84	4	3	7	88
Elk,	1,422	9	. . . .	. . . .	1	9
Erie,	410	167	15	39	16	182
Fayette,	467	125	1	24	6	126
Forest,	208	20	1	3	1	21
Franklin,	402	122	2	10	1	124
Huntingdon,	506	67	. . . .	7	2	67
Indiana,	698	58	. . . .	9	1	58
Jefferson,	417	67	. . . .	6	. . . .	67
Juniata,	623	29	. . . .	. . . .	. . . .	29
Lackawanna,	384	219	13	36	8	232
Lancaster,	425	320	8	39	1	328
Lawrence,	362	90	2	11	4	92
Lebanon,	323	116	3	16	2	119
Lehigh,	5,497	12	. . . .	1	. . . .	12
Luzerne,	375	349	5	57	44	354
Lycoming,	479	116	4	6	2	120
Mercer,	390	143	1	16	9	144
Mifflin,	343	56	1	2	2	57
Monroe,	448	44	1	7	4	45
Montgomery,	548	170	6	4	4	176
Montour,	515	30	. . . .	1	1	30
Northampton,	380	182	3	13	8	185
Northumberland,	563	92	2	16	5	94
Perry,	423	64	1	4	2	65
Philadelphia,	405	1,952	138	95	265	2,090
Pike,	878	11	. . . .	. . . .	2	11
Potter,	1,724	7	1	3	1	8
Schuylkill,	797	163	3	22	. . . .	166
Sullivan,	323	24	1	8	3	25
Susquehanna,	463	85	2	17	3	87
Union,	318	52	1	1	2	53
Venango,	580	77	. . . .	13	1	77
Warren,	325	82	2	6	. . . .	86
Washington,	401	138	. . . .	27	6	138
Wayne,	515	63	2	12	6	65
York,	410	212	2	23	5	214

UNITED STATES FUMIGATING STEAMER.

An act of great importance on the part of the National Government, acting through the U. S. Marine Hospital Service, is the placing of a substantial boarding and fumigating steamer, "The Pasteur," at the quarantine station at the mouth of Delaware Bay. The secretary took occasion to inspect this vessel on different occasions while it was building and believed it to be well adapted to this peculiar service. This acquisition will add much to the value of the station.

NOMENCLATURE OF DISEASE.

An effort is now making to secure greater uniformity in the return of diseases and deaths by registration officers throughout the entire state. A scheme of nomenclature prepared by the secretary in conjunction with other physicians is submitted for your consideration and criticism. It is founded mainly on that adopted by the Royal College of Physicians of England.

SANITARY LEGISLATION.

It is made the duty of the secretary, in his annual report, to suggest amendments to the sanitary code of the commonwealth. The preceding report of the work of the office for the past year should in itself be sufficiently suggestive. The two crying needs of the state for legislation which shall aid in the preservation of the public health and check the unnecessary mortality which is carrying thousands to premature graves are, first, an act to prevent the pollution of streams and protect the purity of water supplies; and, secondly, an act to provide for the sanitary organization of the state. It is unnecessary to remind the Board how seriously it is crippled in its efforts to carry out the beneficent designs of the law establishing it, by want of funds. This however, is a minor evil. It can go on accomplishing much good by dint of practicing a severe economy, as it has done for the past five years, but the two former necessities are absolute and will brook no delay.

INSPECTIONS.

The following is a list of places at which inspections have been made either by members of the Board or its medical inspectors:

Natrona, Allegheny county.
Mansfield, Tioga county.
Devon Inn, Montgomery county.
Berwick, Columbia county.
McKee's Rocks, Allegheny county.
Greensburg, Westmoreland county.
Norristown, Montgomery county.

Uniontown, Fayette county.
Millersville, Lancaster county.
Bridgeport, Montgomery county.
State College, Centre county.
Sunbury, Northumberland county.
Horatio, Jefferson county.
Punxsutawney, Jefferson county.
Beaver River, Beaver county,
Harrisburg, Dauphin county.
Bulger, Allegheny county.
Loyalhanna River, Allegheny county.
Pottstown, Montgomery county.
Altoona, Blair county.
Edge Hill, Montgomery county.
Sharon Hill, Delaware county.
Norwood, Delaware county.
Eddington, Bucks county.
Blairsville, Indiana county.
Chambersburg, Franklin county.
Farrandsville, Clinton county.
Wallingford, Delaware county.
Anderson Water Purification System, Lardner's Point
Bethlehem, Northampton county.
Newville, Cumberland county.
State Line, Bedford county.
Brownsville, Fayette county.
Bethlehem township, Northampton county.
Lenni, Delaware county.
Chester, Delaware county.
Patterson, Juniata county.

Making in all thirty-seven, of which thirty were made by medical inspectors, five by the entire Board and two by individual members of the Board.

REGISTER OF PHARMACISTS.

At the request of Mr. Alonzo Robbins, secretary of the State Pharmaceutical Examining Board, and on the suggestion of His Excellency the Governor, the first annual report of that Board has been incorporated, as an appendix, with the report of our own Board, and a limited number of copies of the same with a "List of Registered Pharmacists and Qualified Assistants," has been issued for distribution by their officers.

CENSUS OF THE PHYSICALLY DEFECTIVE CLASSES.

The effort of the officer in charge of department of vital statistics of the United States Census Bureau, Dr. John S. Billings, appeared to your secretary to offer an opportunity of obtaining information of great value to the Bureau of Vital Statistics in this Commonwealth. Finding that many physicians hesitated to reply to the interrogatories propounded with regard to the defective classes, from motives of professional delicacy, he addressed a communication to the department at Washington asking for a guarantee of absolute secrecy. This was cheerfully and explicitly given. A circular was then addressed to the profession throughout the state, informing them of this guarantee and requesting their co-operation. The following letter indicates the appreciation of this effort on the part of the superintendent of census.

Eleventh Census
of the
United States. C. S. C.
DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE, WASHINGTON, *June* 11, 1890.

SIR: I beg to acknowledge the receipt of your kind favor of the 7th inst., and to thank you for the manner in which you have encouraged the physicians of Pennsylvania to make returns to this office regarding the defective classes of your state. I have read your circular to the "Physicians of Pennsylvania," with great care, and appreciate the spirit that prompted you to so forcibly urge upon the medical fraternity the advantages of making prompt and accurate returns.

Again expressing my thanks, I remain,

(Signed) ROBERT P. PORTER,
Superintendent of Census.

BENJAMIN LEE, M. D.,
Superintendent Vital Statistics of Pennsylvania, Philadelphia, Pa.

EPIDEMICS.

The following is a list of the places where disease has prevailed epidemically, or contagious diseases have occurred, and been reported to the Board:

Typhoid Fever.

1. Lock Haven, Clinton county.
2. Johnstown, Cambria county.
3. Lancaster, Lancaster county.
4. Manor, Westmoreland county.
5. State College, Centre county.
6. Beaumont, Wyoming county.
7. Farrandsville, Clinton county.
8. East Reading, Berks county.
9. Auburn, Schuylkill county.
10. Dallas, Luzerne county.

11. Wallingford, Delaware county.
12. Bethlehem, Northampton county.
13. Dauphin, Dauphin county.
14. Shade Valley.

Diphtheria.

1. Weatherly, Carbon county.
2. Lehman, Luzerne county.
3. East Stroudsburg, Monroe county.
4. Oxford, Chester county.
5. Lincoln University, Monroe county.
6. Langhorne, Bucks county.
7. Monroeton, Bradford county.
8. Middletown, Dauphin county.
9. Waterville, Lycoming county.
10. Pen Argyl, Northampton county.
11. Lenni, Delaware county.

Small-Pox.

Canonsburg, Washington county.
Glen Lyon, Luzerne county.
Pittsburgh, Allegheny county.

Leprosy.

Philadelphia, Philadelphia county.
Chester, Delaware county.

The following is a LIST OF CIRCULARS which have been issued during the year:

4. Regulations in regard to the disinterment and transportation of dead bodies (revised).

Circular No. 28. Precautions against Consumption.

Circular No. 29. The Dangers arising from Public Funerals of those who have died from Contagious or Infectious Diseases. Addressed to the clerical profession.

Circular No. 30. The Disposal of the Sewage of Public Edifices. Addressed to the trustees and managers of public institutions.

Circular No. 31. Precautions to be observed by Undertakers in case of Infectious Diseases.

Circular No. 7 (revised). Precautions against Cholera, Cholera Infantum, Cholera Morbus, Summer Diarrhœa and Dysentery.

Invitations to Fourth State Sanitary Convention, held at Norristown, May, 1890.

Programmes for Fourth State Sanitary Convention, held at Norristown, May, 1890.

The total number of written communications received during the year has been 1,960, and the total number sent 1,835.

The total number of books received by exchange with other boards and scientific bodies during the year has been 44, and the total number of pamphlets during the same period 181.

The total number of books purchased during the year has been 13.

Permits for the disinterment and transportation of bodies have been issued in the following cases:

George L. Bowen; cause of death, diphtheria; from Northeast, Erie county, to Savanna, Illinois. Permission of health officer of Savanna obtained.

Dr. H. Schell; cause of death, phthisis; from California to Pennsylvania.

Twenty-nine bodies of persons identified, and a general permit for the bodies of the unidentified at Johnstown; cause of death, drowning; to be transported from other cemeteries to Grand View cemetery, Johnstown.

Theresa E. Mahratta; cause of death, non-infectious; from Rochester, Beaver county, to Minneapolis, Minn. Permission of health officer of Minneapolis obtained.

Kate O. Obley; cause of death, drowning; from Johnstown to Lower Yoder.

Young woman buried in Grand View cemetery, Johnstown; grave marked 715—N—47; name not given; cause of death, drowning; record of destination not preserved.

Adam Ferg; cause of death, blood poisoning; from Bremen, Germany to Pennsylvania.

Milton Acker; cause of death, croup.

Jane Acker; cause of death, convulsions.

Charles W. Acker; cause of death, croup; all from one grave to another in Rich Valley cemetery, Tylersport.

Harry Seipel; cause of death, intestinal catarrh; from Gum Tree, Chester county, to Frankfort, Philadelphia.

Two children of Henry Riddle, of Media; from one grave to another in churchyard at Middletown, Dauphin county.

The following is a list of the circulars distributed during the past year:

No. 7.	Cholera, etc., revised edition	287
No. 8.	Small-Pox	387
No. 18.	Typhoid fever	1,129
No. 19.	Diphtheria	1,901
No. 20.	Contagious and infectious diseases	621
No. 20.	Contagious and infectious diseases (German)	30
No. 21.	Scarlet fever	595
No. 22.	Trichinosis	87
No. 24.	Care of infants	1,209

No. 25.	Earth closet	112
No. 26.	School hygiene	1,877
No. 28.	Consumption	7,910
No. 29.	Against public funerals in contagious diseases	1,707
No. 30.	Sewage of public edifices	620

And 508 box envelopes, containing each Circulars No. 18, 19, 20, 21, 24, 26, 28; a total of 22,028

INTERSTATE NOTIFICATION OF COMMUNICABLE DISEASES.

During the year, notification of the existence of contagious or infectious diseases has been received from the secretaries of the boards of the following states and provinces:

SMALL-POX.

Minnesota, on two occasions, covering three outbreaks.
Ohio, on three occasions, covering three outbreaks.
Michigan, on five occasions, covering five outbreaks.
Ontario, on one occasion, covering one outbreak.
Connecticut, on five occasions, covering five outbreaks.
Illinois, on one occasion, covering two outbreaks.
Massachusetts, on two occasions, covering two outbreaks.
Kansas, on one occasion, covering one outbreak.
Maine, on two occasions, covering one outbreak.

TYPHOUS.

New York, on one occasion, covering one outbreak.

Similar notification of the occurrence of communicable diseases in Pennsylvania has been sent to the secretaries of all the state and provincial boards, as follows:

Small-pox, on three occasions, covering three outbreaks.
Leprosy, on two occasions, covering two outbreaks.

FINANCIAL REPORT.

The following have been the expenditures of the Board during the year ending November 12, 1890:

Traveling expenses of members, inspectors and lecturers	$416	32
Stationery, apparatus and furniture	152	80
Journals, transactions, etc.	53	99
Registration fees	130	17
Inspections	396	36
Sanitary conventions	248	26
Storage	63	14
Analyses	35	00

Incidentals of office:

Traveling	$154 86	
Clerical assistance	861 55	
Books	52 65	
Postage	273 37	
Expressage	51 87	
Telegrams	8 66	
Messenger service	20 16	
		1,423 12
		$2,919 16

Respectfully submitted.

(Signed) BENJAMIN LEE, M. D.,
Secretary and Executive Officer.

MINUTES.

Minutes of a Special Meeting held February 22, 1890.

Special meeting February 22, 1890.

A special meeting of the Board was held, on the call of the president *pro tem.*, Dr. Groff, at the request of Dr. Edwards, Mr. Murphy and the secretary at the executive office, Saturday, February 22, 1890, at 3 P. M. Present, Drs. Groff, Davis, Dudley, Mr. Murphy, and Drs. Edwards and Lee. The president *pro tem.*, Dr. Groff, presiding.

Objects of meeting stated.

The secretary stated the objects for which the meeting was called to be the auditing of accounts, the appointment of delegates to sanitary conventions and the arranging for the State Sanitary Convention to take place in May.

Auditing vouchers.

Vouchers No. 305 to No. 347, inclusive, amounting to seven hundred and sixty three dollars and forty-two cents ($763.42), which had been passed upon favorably by the Executive Committee were presented and approved.

National conference of State Boards of Health.

A communication from Dr. C. O. Probst, secretary of the State Board of Health of Ohio, and secretary of the National Conference of State Boards of Health, announcing that the Executive Committee of the Conference had fixed on Louisville, Kentucky, as the next place of meeting and the early part of May, date not definitely decided, as the time.

Delegates appointed.

On motion of Dr. Dudley the secretary was authorized to issue credentials to any members desiring to attend the conference.

Time of meetings of Board changed to Thursday.

On motion of Mr. Murphy it was resolved: That, after the present time, the regular meetings of the board shall be held on the second Thursdays of May, July and November, instead of the second Wednesday of those months as heretofore.

Tri-state Convention, delegates appointed.

An invitation from Dr. George I. Garrison, secretary of the Tri-State Sanitary Convention, to be held at Wheeling, West Virginia, February, 27 and 28, to the members of the Board to attend said convention was presented.

On motion of Mr. Murphy, the secretary was instructed to issue credentials to any member desiring to attend.

The secretary then read a communication from the secretary of the board of health of Norristown, requesting that the next State Sanitary Convention might be held in that town.

Communication from Norristown board.

On motion of Dr. Davis, the secretary was instructed to accept the invitation with thanks.

Drs. Edwards, Lee and Dudley were appointed by the chair a committee of arrangements with power to act. The determination of the date for the sanitary convention was left to the discretion of the committee after consultation with the Norristown board.

Convention to be held at Norristown.

The secretary announced that he had in preparation a circular on the subject of "Precautions against Consumption", and that on submitting it to the president, *pro tem.* the latter had suggested the inquiry; "Whether inveterate smokers were ever known to die of consumption?"

Mr. Murphy moved that the secretary be authorized to prepare a circular letter to the medical profession in the state, asking for the results of their observation upon the subject. It was carried, and the Board then, on motion, adjourned.

(Signed) BENJAMIN LEE,
Secretary.

Minutes of the Fifteenth Regular Meeting.

The fifteenth regular meeting of the Board was held at the Borough Hall, Norristown, May 8, 1890, at 1.45 P. M.

Fifteenth regular meeting.

Present Dr. George G. Groff, president *pro tem.*, Drs. J. F. Edwards, J. H. McCelland, Pemberton Dudley and Benjamin Lee, secretary.

An order of business presented by the secretary was, on motion, approved as the order of the day.

Order of business

The minutes of the fourteenth regular meeting held at Harrisburg, November 13, 1889, were read.

Minutes of fourteenth regular meeting approved.

Dr. Groff suggested that the name of Dr. J. F. Edwards be added as assisting in the inspection of the

Susquehanna and Nittany Valleys, and that Huntingdon be substituted for Shimina in the same report.

The secretary requested to be allowed to alter the report of inspection on page 20, from Millerstown to Middletown. These suggestions were adopted, and the minutes approved.

Minutes of special meeting held at Philadelphia approved.

The minutes of a special meeting held at Philadelphia, February 22, 1890, were also read and approved.

Secretary's report.

The secretary then presented his report which included the following items:

1. Letter of regret to Dr. David Engleman. The secretary had sent the letter of regret to Dr. Engelman respecting his retirement from the Board, a copy of the letter was read as follows:

Copy of letter to Dr. Engelman.

Hon. DAVID ENGELMAN, M. D.:

SIR: I am instructed by the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, to transmit to you a copy of the enclosed resolution adopted at its fourteenth regular meeting held at Harrisburg, November 13, 1889.

(Signed) GEORGE G. GROFF, M. D.,
President pro tem.
(Signed) BENJAMIN LEE, M. D.
Secretary.

Resolution.

Resolved, That the State Board of Health of Pennsylvania desires to place on record its high appreciation of the value of the services rendered by the Honorable David Engelman, M. D., its late president, both as a member of the Board and as its presiding officer for more than two years. Not only his sagacious counsel, but his urbane demeanor and agreeable companionship made his presence welcome at its deliberations. The Board trusts that the severance of this official connection, which it regards with sincere regret, will not lessen the interest of their late colleague in the progress of sanitary reform in the state or deprive the Board of his valuable aid in its prosecution.

Typhoid fever at Lock Haven, Clinton county.

The secretary read a letter transmitted from His Excellency Governor Beaver, reporting an epidemic of typhoid fever at Lock Haven. The secretary had communicated with Dr. Groff who had visited and inspected the district. He reported the existence of much sickness, from three hundred to four hundred cases of fever having been mentioned to him. He had conferred with the physicians, many of whom thought the worst of the sickness was over, and had inspected the reservoir, a sample of water from which he had submitted to the secretary for analysis. He found that the June flood had partially filled the water pipes with mud, and that they had only very recently been flushed. In accordance with the suggestions contained in Dr. Groff's report, the secretary had addressed a communication to His Honor Mayor Mason, strongly urging that all water for domestic purposes be boiled before use, that pipes leading from the reservoir be opened and flushed, and that the flushing be repeated as often as necessary to keep them clean.

Diphtheria at Weatherly, Carbon county.

The secretary's attention was recently called to a serious outbreak of diphtheria at Weatherly, Carbon county, by the Rev. A. M. Masonheimer. Dr. Chas. McIntire was instructed to make an inspection. He reported the population to be about thirty-five hundred. The authorities had been fighting against the disease for several years. He considered the chief cause of the epidemic to be the carelessness of the people. A statistical report of the causes of deaths for three years showed the disease to have been exceptionally prevalent and fatal, causing nearly one-half the entire mortality. Founded upon this report the secretary had addressed a letter, which he read, containing suggestions with regard to the proper measures to be taken to check the spread of the contagion, to the "Weatherly Herald," for publication. This produced favorable results, as the epidemic had rapidly diminished.

Typhoid fever at Johnstown.

A report from Dr. George W. Wagoner, assistant deputy medical inspector at Johnstown, demonstrated that the epidemic of typhoid fever in that city was not a result of the flood of June last. The disease was imported into the town by a milkman, the first cases having occurred at the suburb of Moxham, which was entirely out of the reach of the waters. The sanitary condition of the town was in no way responsible for the disease, which had soon diminished, never having been very serious.

Defective drainage at Natrona, Allegheny county.

The secretary had received a complaint that the drainage of Natrona was defective, and that sickness had resulted therefrom. Dr. J. R. Thompson of Pittsburgh, was instructed to make an investigation. He reported the complaint to have arisen from a stream in a foul condition, running through the heart of the town. It was putrid with human excreta and filth, and the offal of a slaughter house. He suggested that the only plan to effectually abate this nuisance was for the railroad company to divert this run or stream into another channel. The secretary had addressed a communication to the secretary of the railroad company, suggesting a new culvert, but the reply of the company was to the effect that to do so would be antagonistic to charter, and, on these grounds, they declined to accede to this request. The secretary had further instructed the slaughter house proprietors to deposit no more refuse in this stream.

The report was accepted, and further action upon it deferred to new business.

Resolution for the prevention of the spread of leprosy.

The secretary reported that at the last meeting of the American Public Health Asscoiation, he had submitted a resolution relative to the prevention of the spread of leprosy in the United States. It was adopted by the association, and copies distributed throughout the country.

Regulation of the U. S. Marine Hospital service.

As a result of this action, the Supervising Surgeon General of the U. S. Marine Hospital Service had issued a regulation which makes it incumbent upon the medical officers at the U. S. quarantine stations to examine immigrants for evidence of this disease, and if any are discovered to be suffering from it to return them at once to the port from which they came.

The report was accepted, and approved, and the regulation ordered to be printed in the annual report of the Board; as also the resolutions of the California State Board of Health upon the same subject.

Defective drainage at Mansfield, Allegheny county.

Acting on a complaint of defective drainage at Mansfield, the secretary had ordered an inspection by Dr. E. D. Payne, who reported that the matter was not of such a nature as necessitated the Board's interference. The secretary communicated this opinion to the borough authorities.

Typhus fever at New York on S. S. Westmoreland.

The secretary of the New York State Board of Health had recently communicated the information that six cases of typhus fever had been discovered among the steerage passengers of the steamship Westmoreland from Hamburg, and furnished a list of the passengers. The secretary had had copies of this list prepared and distributed to all boards of health and health officers in Pennsylvania. No further outbreak had been reported.

Defective drainage at Devon Inn.

The secretary had in hand correspondence between Mr. Howard Murphy, C. E., and Mr. Russel Thayer, C. E., relative to a proposed plan for abating the nuisance arising from the drainage of the Devon Inn. Mr. Murphy had approved the scheme proposed, subject to certain conditions, and suggested that further action be suspended until the scheme could be tried, which suggestion had been adopted.

Test for diagnosis of typhoid fever.

The secretary submitted a test for diagnosis of typhoid fever, which had been brought to his notice by Dr. Thomas F. Wood, secretary to the North Carolina State Board of Health.

Resolved, That the communication of Dr. Wood be received with thanks, and referred for publication in the annual report.

Inspection of water supply at Berwick, Columbia county.

In response to a request from the Jackson Manufacturing Company at Berwick, Columbia County, Medical Inspector William Leiser, Jr., M. D. had been instructed to examine the proposed new source of water supply for that village. Dr. Leiser's report, which was now read, was to the effect that the source was not entirely free from risk of pollution, but that, certain precautions having been taken, it would not be seriously objectionable.

A copy of this report had been sent by the secretary to the company.

Diphtheria at Lehman, Luzerne county.

A recent epidemic of diphtheria had occurred at Lehman, Luzerne county. The physicians in the district were commnicated with by Medical Inspector, Dr. L. H. Taylor, who reported about thirty-five cases and ten deaths. Circulars had been freely distributed and the epidemic had abated.

Diphtheria at East Stroudsburg.

In consequence of a rumor that diphtheria was epidemic at East Stroudsburg, the secretary had directed Dr. Charles McIntire, medical inspector for the Lehigh district, to investigate. He had placed himself in communication with the resident physicians, who reported that the epidemic had nearly spent itself. He had also visited the district, and had suggested the formation of a local board of health.

The secretary had addressed a communication to the chief burgess urging the importance of this step, which he read.

Diphtheria at Pittston.

A report of Dr. L. H. Taylor, medical inspector, on an alleged epidemic of diphtheria at Pittston, Luzerne county, was presented.

Nuisance near public school.

The secretary had received a complaint from the school board of Stowe township, McKees Rocks, that certain persons dumped manure and refuse near to the public school, which created a serious nuisance. Dr. J. R. Thompson, medical inspector, had been ordered to investigate, and he had confirmed the complaint.

The secretary had sent orders to each person making such deposit of manure to cease, and to remove the nuisance forthwith.

Alledged case of yellow fever at Womelsdorf, Berks county.

A somewhat alarming report appeared in the press of March 25, to the effect, that a case of yellow fever had terminated fatallv at Womelsdorf. The secretary had instructed Dr. W. Murray Weidman, medical inspector, to make full inquiries, and to interview Dr. F. Sallada, who had had the case in charge. On receiving the Inspector's report he had detailed the symptoms in a communication to a yellow fever expert in Florida, who denied the accuracy of the diagnosis, considering it rather a case of pernicious malarial fever.

Case of leprosy at Philadelphia.

The secretary reported the discovery of a recent case of leprosy, in the person of a Chinaman, in Philadelphia Hospital. He had addressed communications to the secretaries of all local boards of health in Pennsylvania, and to the secretaries of all state boards reporting the case, his object being to arouse the profession to a sense of the importance of being on the lookout for that disease.

Inspection of new quarantine steamer for station at mouth of Delaware Bay.

The secretary submitted a report of an inspection of the fumigating steamer "Louis Pasteur," together with cuts showing the special devices, engines and apparatus, for disinfecting vessels and cargoes on a large scale.

The matter of publishing the cuts in the annual report was left to the discretion of the secretary.

Tri-state sanitary convention at Wheeling, W. Va.

The secretary had attended the Tri-State Sanitary Convention at Wheeling, West Virginia, on February 27 and 28, held for the purpose of considering the problems which confront the sanitarian as a result of great floods, the states interested being Pennsylvania, Ohio and West Virginia. Many valuable papers were presented which have already appeared in the "Annals of Hygiene." The proceedings and papers were largely reported in the daily press, and much good would no doubt result.

Diphtheria at Oxford, Lincoln Institute, Chester county.

Communications were read from Dr. S. W. Morrison, health officer of Oxford, on diphtheria at Oxford, and Lincoln Institute. Dr. W. B. Atkinson, medical inspector, had been directed to investigate. He reported that careful precautions were now being taken and apprehended no further spread of the disease.

Inspection at Greensburg, Westmoreland county.

At the urgent request of the borough authorities of Greensburg, Dr. W. E. Matthews, medical inspector, had been directed to make an inspection of that borough. Dr. Matthews reported that the most serious obstacle in the way of sanitary improvement of the borough, which was greatly needed, was the lack of the necessary grant of power in its charter of incorporation.

Action on this subject was deferred for further consideration under the head of new business.

Disinterment and transportation permits.

The secretary had given authorty to disinter and transport the bodies of the following persons, due notice having been given to, and permission having been obtained from, authorities interested:

George L. Bowen, buried two years, from North East, Erie county, Pa., to Savanna, Illinois, cause of death, diphtheria.

Dr. H. Schell, from California to Pennsylvania, cause of death, phthisis.

Twenty-nine bodies of persons identified, and a general permit for the unidentified, from or about the neighborhood of Johnstown, cause of death drowning.

Insanitary condition of Hazleton, Luzerne county and Tarentum, Allegheny county.

The secretary reported that private commplaints had been received of the insanitary condition of Hazleton, and Tarentum, Pa. The usual printed letter requiring ten persons to unite in the complaint, had been sent and nothing further had been heard.

Proposed Board of Health at Middletown, Dauphin county.

The secretary had been in communication with the burgess of Middletown with regard to the establishment of a board of health in that borough. The report of Dr. Hartman at the last meeting of this Board showed that it was greatly needed, but the people evidently preferred to get the State Board of Health to do the work for them.

Complaint of typhoid fever at Rockwood, Somerset county.

The secretary had recently received a complaint from one of the resident physicians at Rockwood, that typhoid fever prevailed there. He had instructed Dr. C. L. Gummert, medical inspector, to make an inspection.

His report led the secretary to conclude that the complaint was founded upon jealousy between the local physicians, and no farther action had been taken.

Water supply of Muncy, Lycoming county.

With regard to proposed source of water supply for Muncy, the secretary had written to the authorities as directed. A copy of the letter was read warning the council to be cautious in accepting a water supply of doubtful purity

Requests for reports of mortality in the State Hospital for the Insane, Norristown, Pa.

The secretary reported that at the request of the Norristown local board of health, he had addressed a communication to the Board of Trustees, State Hospital for the Insane, Norristown, requesting them to furnish copies of the monthly reports of that institution to said local board. The request was complied with

A copy of the letter to his Excellency Governor Beaver, declaring the nuisances in the valleys of the Juniata and the West Branch of the Susquehanna abated, was now read. The action was approved.

In response to a request from the Pennsylvania Forestry Association, the secretary had addressed communications to the chairmen and members of the committee appointed by Congress on forestry, to aid in obtaining an act of Congress or the better protection of forests. One reply had been received, which was read.

Annual reports of boards of health.

The secretary placed before the Board the annual reports of the boards of health of Altoona, Oil City and Reading, Pa. Ordered that the reports be read by title, and abstracts from same be printed and published in the annual report.

Powers of boards of health in boroughs.

The secretary had been in correspondence with the Attorney General relative to the powers of boards of healths in boroughs. The opinion of the Attorney General was read. The secretary further reported an interview with Dr. H. H. Whitcomb, secretary of the Norristown board of health, on this subject

The Board was of the opinion that in case a local board was inoperative, through lack of power, the State Board could aid by ordering an abatement of any nuisance.

The report of the secretary was accepted and action deferred to new business.

Appointment of special medical inspector for the Pennsylvania railroad company.

The secretary reported the appointment of Dr. E. C. Town as special medical inspector for, and at the request of, the Pennsylvania Railroad Company, with power to act with regard to sanitation of Broad Street station and other stations in and near Philadelphia.

The action of the secretary was approved and the appointment confirmed.

Statistics on pandemic of influenza.

The secretary reported the results of answers to circulars sent out to the physicians in Pennsylvania on the subjects, to date as follows:

Number of physicians reporting.............	265
Number of cases,.........................	37,275
Adults, ...	26,302
Children, ...	10,973
Number of cases nervous,..................	6,913
" catarrhal, ...	16,434
" inflammatory.	5,829
Number of deaths directly caused,...........	56
" indirectly caused, ...	205
Immediate cause of death, bronchitis, ...	8
" " pneumonia,........	117
" " phthisis, ...	42
" " nervous, ...	21
Number of circulars to date, ...	4,500

The report was accepted.

Transportation of dead bodies.

The revised regulations of the Board on the disinterment and transportation of dead bodies was presented.

Precautions against consumption.

Circular No. 28, "Precautions against Consumption." The secretary presented copies of these circulars, and reported that they had been distributed throughout Pennsylvania to physicians, boards of health, borough councils, newspapers, medical journals and undertakers.

Financial report.

The secretary reported that as treasurer his disbursements, since last meeting, amounted to $1,435.92. The report was accepted.

The number of written comunications received since last meeting has been 978; number sent, 1,037; cyclostyle letters sent on influenza, 4,500, and on the inveterate smoking of tobacco, affecting the development of tuberculosis, 4,500; books added to library, 11; pamphlets added, 70.

Reports of committees being next in order.

Executive committee's report.

The Executive Committee reported that it had held three meetings since the last meeting of the board, at which accounts represented by vouchers Nos. 305 to 359 had been audited and approved, the amount expended having been $1,435.92. The report was accepted and approved.

Dr. Lee, chairman of Committee on Vital Statistics,

Report of Committee on Vital Statistics.

reported that the register of the physicians of Pennsylvania was now going through the press, and would be ready for the next annual report.

The committee also desired to present for consideration of the Board a system of nomenclature to be followed by physicians and registrars in making returns of diseases and deaths, a copy of which would be sent to each member for his individual criticism and suggestions. The report was accepted.

Proposed form of blanks.

Dr. J. H. Mc Clelland moved, and it was

Resolved, That this Board recommends all boards of health and health officers to adopt a uniform blank for reporting "Causes of Death," and would suggest the use of the following form in describing the "Causes of Death," viz: Predisposing or complicating, immediate or determining.

Report of Committee on Travel and Traffic.

Dr. J. F. Edwards, chairman, reported that he had had prepared special resolutions of thanks to Dr. Benjamin Lee, secretary, and George G. Groff, president *pro tem.*, for their arduous services in connection with the flood of May 31, 1889. The resolutions were read and adopted.

Report of Committee on Adulterations, Poisons, etc.

Dr. Pemberton Dudley, chairman, reported that Professor Henry Leffmann had proposed to make certain analyses and examinations without cost to the board. The report was accepted.

Report of Committee on Sanitary Convention.

Dr. J. F. Edwards, chairman, reported that the arrangements were now completed, and presented the preliminary announcement and program. Several conferences had been held with the committee of the Norristown board of health, and invitations had been extensively circulated among physicians, borough authorities, boards of health and school teachers. The report was accepted and the committee discharged. The Board now adjourned to meet at 7.30 P. M., at the Montgomery House.

The Board reconvened at the Montgomery House at 7.30 P. M.

New business.

New business being in order, the subject of the nuisance from an open drain at Natrona was called up.

Dr. J. H. McClelland was appointed a committee to lay the matter personally before the receiver of the Allegheny Valley railroad, and to urge an abatement of the nuisance, and the secretary was instructed to address an official communication to the railroad authorities on the subject.

Sanitary business of Greensburg, Pa.

In reference to the request of the authorities of Greensburg, Pa., the secretary was authorized to offer and extend to the authorities of Greensburg all assistance to the extent of the Board's legal powers in improving the sanitary condition of the town.

Nuisance at Middletown.

The secretary asked for instructions as to the course to be pursued in regard to the nuisances reported by Dr. Hartman, as existing at Middletown, Dauphin county.

This matter was referred back to the secretary, with power to act according to his judgment and discretion.

The Board then adjourned to meet at 8 P. M., Friday, May 9, to listen to the Annual Address before the Board, to be delivered by Prof. A. Arnold Clark, of Lansing, Michigan.

Adjournment to sanitary convention.

The Board reconvened at 8 P. M., Friday, May 9, according to adjournment, to hear the Annual Address which formed a portion of the proceedings of the State Sanitary Convention. The subject of the address was:

DISEASE PRODUCING GERMS.

It was a masterly exposition of the subject, and riveted the attention of the large and intelligent audience. Excellent music was furnished for the occasion by the orchestra of the State Hospital for the Insane of the Southeastern District.

Invitation to visit hospital.

(*Note.*—During Friday and Saturday the members of the Board attended the sessions of the State Sanitary Convention.)

At 2 P. M. Saturday, May 10, the Board accepted the kind invitation of the trustees of the state hospital for the insane, to visit their institution and inspect its drainage system. At the conclusion of the inspection, the Hon. S. T. Davis, M. D., offered a resolution thanking the trustees, resident physicians and steward for their courtesy, and expressing the gratification of the Board at the care bestowed upon the sanitary arrangements of the hospital.

The meeting then adjourned *sine die*.

(Signed) BENJAMIN LEE, M. D.,
Secretary.

Special meeting May 28, 1890.

A special meeting of the Board was held, Wednesday, May 28, 1890, at 3.30 P. M. at the executive office. Present, Dr. J. F. Edwards, presiding, Dr. Pemberton

Dudley, Howard Murphy, C. E., and Dr. Benjamin Lee, secretary.

Auditing of accounts.

The secretary stated the special business for which the meeting was called to be the auditing of accounts and presented bills amounting to three hundred and sixteen dollars and eighty-one cents ($316.81) representing vouchers No. 360 to No. 376, inclusive, which had been audited and approved by the executive committee.

On motion they were approved and ordered, to be paid.

The meeting then adjourned.

BENJAMIN LEE,
Secretary.

Sixteenth Regular Meeting.

Minutes of the sixteenth regular meeting.

The sixteenth regular meeting of the Board was held at the Supreme Court Room, Harrisburg, July 10, 1890, at 4 P. M. Present, Dr. George G. Groff, Dr. P. Dudley, Dr. Samuel T. Davis, Dr. J. H. McClelland, Howard Murphy, C. E., and Dr. Benjamin Lee, Secretary.

Order of business.

An order of business presented by the secretary was adopted as the order of the day.

The secretary announced that Dr. J. F. Edwards had expressed to him regret at being unable to be present, owing to sickness in his family.

Confirmation of minutes of fifteenth regular meeting and of special meeting.

The minutes of the fifteenth regular meeting, held at Norristown, May 8, 1890, were read and approved. The minutes of a special meeting, held at the executive office, May 28, 1890, were also read and approved.

Secretary's report.

The secretary then presented his report, which included the following items.

Permit for disinterment and removal of dead body.

In response to a request, by telegraph, for permission to disinter and remove the body of Theresa E. Maratta, from Rochester, Beaver county, to Minneapolis, Minnesota, the secretary had replied that the permission of the health officer of Minneapolis must first be obtained. This was done, and the secretary then directed the authorities at Rochester, after assuring themselves that all the requirements of the Board had been complied with, to issue the necessary permit.

Resolution of thanks to hospital trustees and others.

The secretary reported that he had sent a special resolution of thanks to the following persons at Norristown, for their courtesy to the Board at the late sanitary convention: Dr. Robert H. Chase, superintendent male department State Hospital for the Insane; Dr. Alice

Bennett, superintendent, female department State Hospital for the Insane; president and trustees of the same institution; the leader of the orchestra of the State Hospital Band; the county commissioners of Montgomery county; the board of health of Norristown and the borough council.

Report as delegate to national conference of state boards.

The secretary reported that he had attended, as delegate, the National Conference of State Boards of Health, held at Nashville, Tennessee, May 19, and 20 last, and presented a detailed statement of their proceedings. As chairman of a committee on the subject of the contagiousness and spread of leprosy as affecting the United States, he had read a report and presented resolutions calling for a stringent enforcement of the quarantine against that disease.

Inter-state quarantine act

A copy of the interstate quarantine act passed at Washington during the present Congress was presented, and ordered to be included in the annual report.

Public funeral in case of death from scarlet fever.

A comunication had been received from Dr. H. A. Arnold, Ardmore, former president of the Montgomery County Medical Society, stating that a public funeral had been held at Catasauqua in the case of a death from scarlet fever, and that he had been called to see a child who had contracted the disease on that occasion. The secretary had at once addressed the authorities of Catasauqua on the great danger of public funerals in contagious diseases, and had sent circulars on scarlet fever to the minister who conducted the service and other persons implicated.

Inspection of a drain at Uniontown.

Dr. C. L. Gummert, medical inspector of the southern tier district, had recently inspected a mill race or drain at Uniontown, which he found to constitute a nuisance. The citizens had requested him to superintend the abatement of the nuisance. The secretary had replied, declining to allow Dr. Gummert to superintend the abatement in his official capacity as medical inspector, and warning him against making himself or the board liable for any expense. He had also sent notices declaring the drain a nuisance, and ordering an abatement. The general opinion of the Board was condemnatory of medical inspectors accepting compensation for superintending the abatement of a nuisance so declared by the Board.

Circular to clergymen on public funerals.

Mr. Howard Murphy suggested that a circular be printed and sent to all the clergymen in the state, asking their aid and co-operation in the prevention of public funerals in cases where the death was from a contagious disease.

After some discussion the matter was referred to new business.

Correspondence with State Anatomical Board.

The Secretary had received a communciation from Dr. William H. Parish, secretary of the State Anatomical Board, stating that it had been reported to him that the State Board made a charge of fifty cents for each body delivered to the anatomical board from a state hospital. The secretary replied denying this statement and pointed out that a local board had the right to make a reasonable charge for a transportation permit for each body so delivered, and that this charge had probably been so made. This Dr. Parish afterward found to be the case and so reported to the secretary.

Milk inspection and duties of a health officer.

The secretary had received a request from the health officer of Scranton (Dr. W. E. Allen), to explain to him the course generally adopted in regard to milk inspection. He had replied, stating that the laws of Pennsylvania made the specific gravity test legal and the basis for prosecution, and naming the most modern instrument for milk inspection (Tagliabue's lactometer). He also stated that the chief milk inspector of Philadelphia would gladly explain and demonstrate his system to any officer.

Small-pox in Pittsburgh.

A notification of the occurrence of a case of small-pox in Pittsburgh had recently been received. The secretary had notified all the state boards and also health boards in Pennsylvania.

Appointment of delegate to State Sanitary Convention from Delaware.

The secretary reported the receipt of a communication from the State Board of Health of Delaware to the effect that a delegate from that Board would in future attend the meetings of the Pennsylvania State Sanitary Convention. He had replied acknowledging the courtesy and promising to give that Board due notice of next convention.

Proposed ordinance for the protection of milk in Philadelphia.

The secretary laid before the Board a copy of the proposed ordinance for the protection of the milk supply of Philadelphia, and suggested that it be inserted in the next report of the state board, with the explanatory pamphlet of Dr. Ford, president of the Philadelphia board.

Inspection at Devon Inn, and State Normal School, Millersville.

The Secretary together with the members of the Board had inspected the sewage purification system of the

Devon Inn, Berwyn, on the 27th of June, ult. Also the drainage of the State Normal School at Millersville, Lancaster county, on June 28, the day following. A report on these inspections would be received from the Committee on Water Supply, Drainage, Topography and Mines, which made it unnecessary for him to go into detail.

Mortality returns of Williamsport.

The secetary presented the mortality returns for the year 1889, of the city of Williamsport, and suggested that they be inserted in next annual report.

Nuisance from stagnant ponds at Bridgeport.

A communication had been received from Mr. Howard Murphy, stating that a nuisance existed at Bridgeport, Montgomery county, from stagnant ponds. The secretary had addressed a communication to the parties maintaining the nuisance ordering an abatement of the same, and to the complainant informing him that this action had been taken.

Complaints of minor nuisances.

The secretary reported the receipt of complaints of minor nuisances from Apollo, Armstrong county; Blairsville, Indiana county; Springdale, Allegheny county; McKees Rocks, Allegheny county; Valley View, Easton, Northampton county; Swedeland, Montgomery county; McKeesport, Allegheny county; Burgettstown, Allegheny county; Bridgeport, Montgomery county; Mont Clair, Montgomery county. In all of these instances the complainants had failed to respond to the circular letter which had been sent requiring the affidavits of ten householders before any action can be taken.

Epidemic sore throat at State College.

The secretary reported the receipt of a complaint from State College, Centre county, that much sickness prevailed in that institution, and asking for an investigation. Dr. Groff, at the secretary's request, stated he had visited the institution in answer to a telegram from the president. He recommended that the cases of acute sore throat which he found be isolated and treated as epidemic; that the building be thoroughly disinfected, and confirmed the request for an inspection.

The secretary read the report of Dr. C. B. Dudley, who had been instructed to inspect the college, which stated that he had made inquiries by telegraph and learning that the epidemic of sickness had abated, had not visited the college in person. The secretary stated that further instructions would be sent to Dr. Dudley.

On motion, the secretary's report was adopted in full, Secretary's report adopted.

as the report of the Board, the recommendations contained in the same approved, and the report ordered for publication in the annual report.

Report of committee on vital statistics.

Dr. Lee, chairman of the Committee on Vital Statistics, reported that, in connection with the recent census, he found that some doubt had arisen among physicians with regard to the propriety of giving information as to physically or mentally defective classes. He had communicated with Hon. Robert P. Porter, Superintendent of Census, on this subject, and Dr. John S. Billings, of Washington, D. C., in charge of special statistics, both of whom assured him that all such communications would be treated confidentially and at once destroyed after being used to correct the returns of enumerators. He had conveyed the correspondence through the press to all physicians in Pennsylvania.

The report was accepted and approved.

Report of committee on drainage, water supply, mines, etc.

Mr. Howard Murphy, C. E., reported that the Committee on Drainage, etc., had recently inspected the drainage purification system of the Devon Inn, Berwyn, and the drainage of the State Normal School, Millersville, Lancaster county. With regard to the former, as the system had evidently not had time to become perfect, the committee recommended that after reasonable time had elapsed a complete set of analyses be made to obtain the exact results of the process, after which a further report will be submitted by the committee.

As regards the drainage of the State Normal School at Millersville, the committee regards it as almost superfluous to enlarge upon the conditions which prevail, as it was about the filthiest stream the committee ever saw, and they recommend that proper action be taken in this case at the present meeting.

The report was accepted.

Report of committee on sanitary legislation.

Dr. Samuel T. Davis reported that the next legislature would soon meet, and it would be for the Board to decide what matters would require to be introduced in the coming session.

The report was accepted.

Nomination of a president.

Nomination of president being next in order, Dr. J. H. McClelland nominated Dr. George G. Groff president for the ensuing year. The secretary was directed to cast a single ballot, and to act as teller. The secretary reported that five ballots had been cast, unanimously in favor of Dr. Groff, who was declared duly elected president.

New business being next in order, the following points which had been discussed during the reading of the secretary's report were called up for action. It was moved by Mr. Howard Murphy.

New business.

That a circular be addressed to all clergymen in Pennsylvania, asking for their influence and co-operation with the Board in preventing public funerals of those who die from contagious and infectious diseases. The secretary requested to be allowed to introduce in such contemplated circular the paper on this subject read at the recent sanitary convention by the Rev. S. Bridenburgh, of Norristown. This was complied with, and the preparation of the circular was referred to the Committee on Sanitary Legislation, Rules and Regulations.

Circular to clergymen.

The disposal of the complaint of a nuisance from a drain at Sunbury was left in the hands of the secretary.

Nuisance at Sunbury.

The Secretary was authorized to declare the drainage of the State Normal School at Millersville, Lancaster county, a nuisance, and to recommend to the trustees of the institution, in the most urgent manner, that it be promptly abated.

Nuisance from drainage at State Normal School to be abated.

The meeting then, on motion, adjourned.

(Signed) BENJAMIN LEE,
Secretary.

A special meeting of the Board was held at the executive office, August 30, 1890, for the purpose of auditing accounts and transacting general routine business. Present: Dr. Geo. G. Groff, president in the chair; Dr. Pem. Dudley, Dr. J. F. Edwards and Dr. Benjamin Lee secretary.

Minutes of a special meeting held August 30, 1890.

Mr. Howard Murphy arrived just after adjournment, having been detained by the failure of his train to make the usual connection.

The secretary stated that Dr. S. T. Davis had written expressing his regret at being unable to be present.

The secretary presented bills amounting to $189.92, and covering vouchers Nos. 387 to 391, which had been audited and found correct by the Executive Committee. they were approved.

Audit and approval of vouchers.

The secretary presented, on behalf of the Committee on Vital Statistics, printed copies of the scheme of nomenclature of diseases, intended as a guide for all boards of health in the state in making returns, referred to at the last meeting. He begged that the members would

Proposed scheme of nomenclature as a guide for boards of health.

give it careful consideration, and send him as soon as possible any suggestions or criticisms that might occur to them.

Circular to clergymen. Public funerals in contagious diseases.

The secretary laid before the Board copies of the new circular No. 29, addressed to clerygmen, on the "Dangers of Public Funerals in Infectious Diseases," and announced that copies were being distributed as ordered at the last meeting.

Revised edition of circular No. 27.

A revised edition of circular No. 27, "Precautions against cholera, cholera morbus, cholera infantum, summer diarrhœa and dysentery," had also been largely distributed.

The circulars were approved.

Circular to trustees of public institutions.

The secretary presented and read a copy of the proposed circular letter to the trustees of public institutions, on "the disposal of the sewage of public institutions," which the Board had instructed him to prepare at the last regular meeting.

It was approved.

Inspection of State State Lunatic Asylum at Harrisburg.

The secretary reported that at the request of the trustees of the State Lunatic Asylum at Harrisburg, he had visited that institution in order to examine its drainage system.

The authorities of the asylum were anxious to be advised, and willing to adopt any reasonable plan recommended by the Board. In the absence of the chairman of the Committee on Drainage the matter was referred for subsequent consideration.

Pollution of water at Horatio and Punxsutawney.

The secretary read two letters describing the pollution of the water supply at Horatio and Punxsutawney, Jefferson county (from Dr. Charles G. Ernst, of Punxsutawney), and asking for an official investigation by the Board.

On motion the Board directed that Dr. Ernst be requested to forward the usual formal complaint with affidavits, and that on receipt thereof an inspection be ordered.

Alleged pollution of Beaver River by salt and oil residuum.

The secretary presented a complaint from citizens of Beaver Falls with regard to the pollution of Beaver river by salt and oil from oil wells.

The secretary was directed to instruct Dr. J. R. Thompson to make an inspection of the polluted stream, and to obtain, if possible, the assistance of Dr. J. H. McClelland in prosecuting the investigation.

A complaint has been received of a nuisance from a cheese factory at Bulger, Allegheny county, Dr. J. R. Thompson had inspected the factory. He reported a nuisance from decomposing whey and a filthy hog-pen. The proprietor had promised that no swine should be kept on the premises after the coming fall.

Nuisance from a cheese factory at Bulger.

The Board directed that notice be served on the proprietor to keep the pens and premises in proper condition.

A complaint of contamination of water of the Loyalhanna river at Saltsburg was, on investigation by Dr. J. R. Thompson, found to be correct. The polluted water had killed many fish. The pollution was supposed to be caused by a chemical (perhaps sulphite of soda) from the paper manufactory of James Peters & Co. It did not appear however, that the poisonous material affected the water supplies of Pittsburgh and Allegheny as had been charged. The complaint was dismissed.

Alleged pollution of the Loyalhanna River at Saltsburg.

The secretary reported the receipt of a similar complaint from a fish warden of Montgomery county, stating that large numbers of fish had been killed either by poison or dynamite in a mill race near Pottstown. The Board was of the opinion that the powers of the fish warden were sufficient in the premises.

Alleged pollution of stream at Pottstown.

The secretary presented a complaint from Dr. S. C. Baker, alleging that a stream which passed through his property was being seriously contaminated by the sewage of Altoona. An investigation was ordered.

Complaint of pollution of stream at Altoona.

Dr. W. B. Atkinson's reports of inspections at Edge Hill, Montgomery county, and Sharon Hill, Delaware county, were also read. In each case the nuisance had been abated after receipt of order from the secretary.

Reports of inspections at Edge Hill and Sharon Hill.

The action of the secretary was approved.

On motion the meeting then adjourned.

(Signed) BENJAMIN LEE, *Secretary*.

Seventeenth Regular Meeting.

The seventeenth regular meeting of the Board was held at the Supreme Court room, Harrisburg, November 13, 1890, at 4 P. M.

Seventeenth regular meeting of board at Harrisburg, Nov. 13, 1890.

Present: Dr. Geo. G. Groff, president, Dr. Pemberton Dudley, Dr. J. F. Edwards, Dr. Samuel T. Davis, Dr. J. H. McClelland, Mr. Howard Murphy, C. E., and Dr. Benjamin Lee, secretary.

In the absence of the president, Dr. Geo. G. Groff, at the first session, the Hon. Samuel T. Davis, M. D., was called to the chair.

An order of business, presented by the secretary was adopted as the order of the day.

The minutes of the sixteenth regular meeting, held at Harrisburg, July 10, 1890, were read.

Mr. Howard Murphy suggested that in the matter of the Devon Inn drainage, the word Berwyn be changed to Devon. With this correction the minutes were approved.

The minutes of a special meeting, held at the executive office, Philadelphia, August 30, 1890, were read and approved.

The secretary then presented his report, which included the following items:

Annual report.

1. The secretary read his sixth annual report to the Board. It was accepted and adopted with the thanks of the Board, and ordered to be transmitted to His Excellency the Governor, together with the minutes of the Board for the past year, as the annual report of the Board.

Mr. Howard Murphy suggested that in any future proclamation with regard to diphtheria, issued by the secretary, the period during which the patient is liable to communicate the disease to others be stated as not less than thirty days, and then only in case all the prescribed conditions have been complied with. The suggestion was adopted.

Importation of Spanish rags.

The question of the expediency of prohibiting the importation of rags from any Spanish port, in consequence of the existence of cholera in that country, was referred to new business.

The subject of the insanitary condition of the old canal beds in the state was also referred to new business.

Permits for disinterment and transportation of bodies.

2. The secretary reported that since the last meeting the following permits for disinterment and transportation of bodies had been issued:

Adam Ferg, cause of death, blood poisoning, from Bremen, Germany, to Pennsylvania.

Milton Acker, cause of death, croup.

Jane Acker, cause of death convulsions.

Charles W. Acker, cause of death, croup; all from one grave to another in Rich Valley Cemetery, Tylersport.

Harry Seipel, cause of death, intestinal catarrh, from Gum Tree, Chester county, to Frankfort, Philadelphia.

Two children of Henry Riddle of Media, from one grave to another in church-yard at Middletown, Dauphin county.

Complaint of defective drainage at Norwood.

3. A complaint of defective drainage had been received from several residents of Norwood, Delaware county. Medical Inspector Wm. B. Atkinson reported that the drainage was seriously defective, and that there were also other nuisances prejudicial to the public health. The secretary had caused notices to be served upon the several parties maintaining these nuisances requiring prompt abatement, and no further complaints had been received.

Diphtheria at Langhorne, Bucks county.

4. Diphtheria having been reported as prevalent at Langhorne, Bucks county, Medical Inspector Wm. B. Atkinson on investigation found the cellars of some of the houses where the disease had occurred to be foul, and the drainage bad. Notices had been served on the property owners requiring the premises to be cleared and disinfected, and no further cases were reported.

Diphtheria at Monroeton, Bradford county.

5. Medical Inspector E. D. Payne had been instructed to make inquiries with regard to an epidemic of diphtheria at Monroeton, Bradford county. Dr. Payne reported that he had sent instructions and no further action was necessary on the part of the Board.

Typhoid fever at Sunbury, Northumberland county.

6. The secretary reported the receipt of complaint of typhoid fever at Sunbury, Northumberland county. Medical Inspector Wm. Leiser reported as a result of an investigation made by himself, accompanied by Dr. Groff, that the disease was limited to a small area, all persons affected using water from one well the surroundings of which were very unhealthy. The secretary had communicated with the burgess, ordering this well to be closed, and pointing out other sanitary precautions necessary to be taken.

Report of sickness at Ben Salem, Mechanicsville and Eddington, Bucks county.

7. In consequence of the report of an unusual amount of sickness in these places, Medical Inspector Wm. B. Atkinson had recently inspected Bensalem, Mechanicsville and Eddington, Bucks county. A very careful investigation failed to reveal any unusual sickness, except two cases of diphtheria, both of which had died, at Mechanicsville. He therefore reported that further action by the Board was unnecessary.

Inspection at Blairsville.

8. On the receipt of a complaint from the authorities of Blairsville, Medical Inspector W. E. Matthews had been ordered to visit that borough. He reported that in

consequence of the Johnstown flood the people had abandoned the use of the Conemaugh water, and were using old abandoned well water. He considered this filthy water as the cause of the epidemic of typhoid fever prevailing. The secetary had caused samples of this water to be analyzed and reported the result to the burgess of Blairsville. A further investigation would be made by himself and Dr. Matthews.

False report of leprosy at Chester Military Academy.

9. The secretary reported that a Spanish subject, suffering from leprosy in New York, was stated to have been an inmate of the West Chester Military Academy. Prompt investigations disclosed the fact that the leper had never been an inmate of the institution. The secretary received the thanks of the authorities of the institution for instructions sent them with regard to disinfection in case the rumors proved true.

Epidemic of typhoid fever at Lancaster.

10. The secretary reported an alarming outbreak of typhoid fever among the operatives in an umbrella factory at Lancaster. An investigation by the local board of health disclosed the fact that they were furnished drinking water from a well in the cellar of the factory. A specimen of this water was obtained and sent to Dr. Cresson for analysis. It proved to be extremely polluted. The local board, under the advice of the secretary, ordered the use of this well for drinking purposes discontinued, and the epidemic soon came to an end.

Typhoid fever at Manor, Westmoreland county.

11. Information having been sent that typhoid fever prevailed to an alarming extent at Manor, Westmoreland county, on investigation the report was found to have little or no foundation.

National quarantine act.

12. Copies of the national quarantine act passed at the last session for Congress were submitted for the information of the members.

Inspection at State College, Centre county.

13. The secretary reported that in consequence of the receipt of a request from the president of the State College, Mr. George Atherton, who reported an epidemic of sore throat in the college, Medical Inspector, Dudley had inspected the building and neighborhood and analysed a sample of the water used, the result of the analysis showed the water to be of a somewhat suspicious character. A report of the analysis and measures suggested by Dr. Dudley had been sent to the authorities of the college who thanked the Board for its action.

14. The secretary reported that Dr. Chas. M. Cresson had issued a valuable report of examination of Norristown water supply, which he thought should be published in the annual report. Dr. Cresson reported the existence of a manure pile on the banks of the stream contaminating the water above the town. It was also found that the Reading Railroad Company was dumping filth from its nearest station at the same place. The secretary, acting in conjunction with the Norristown board, had caused the removal of these dangerous conditions.

Report of inspection of Norristown water supply.

The report was accepted.

15. The secretary reported the receipt of a communication from the Oil City board of health inquiring with regard to their powers to close a spring of water, and to insist on proper precautions being observed at certain railroad crossings. He had advised the Board that they had power to enforce the closing of the spring, but that they could only advise the railroad company as to crossings.

Letter to Board of Health of Oil City. Venango county.

16. The secretary reported that he had received from the secretary of the State Board of Health of Delaware, a valuable report on the beneficial results of sulphurous disinfection, from the pen of Dr. H. B. Baker, of Michigan, which he asked leave to insert in annual report.

Value of sulphurous disinfection.

17. A complaint had been received from the Danville town council that the sewage from the State Lunatic Hospital above the town seriously contaminated the Susquehanna river. The secretary had replied, stating that the Board had issued a warning circular on this subject to all state institutions, and that he had already personally inspected the drainage system of the asylum.

Contamination of a stream by drainage from State Hospital at Danville.

18. The secretary reported the formation of a local board of health at Carbondale, Lackawanna county.

Board of health formed at Carbondale.

19. A recent inspection of Chambersburg made at the request of the council, by Medical Inspector R. L. Sibbet, showed the drainage of that borough to be seriously defective. He had communicated with the authorities on this subject, pointing out certain sanitary improvements suggested by Dr. Sibbet, in regard to sewerage and drainage, which he believed would produce good results.

Defective drainage of Chambersburg, Franklin county.

20. On the receipt of a complaint from the council of Allegheny City, asking the State Board to investigate the condition of the Allegheny river at Saltsburg,

Pollution of Allegheny River at Saltsburg.

as to an alleged pollution of its water by chemical works, Medical Inspector Thompson was ordered to visit the place, and reported, after investigation, the contamination not of a serious nature, and not likely to reach Pittsburgh.

Report of analysis of water made at State College.

21. Medical Inspector C. B. Dudley had reported the results of his analysis of the water at State College, made in consequence of the occurrence of a number of cases of typhoid fever in the village, which, while not condemning the water absolutely, led to suspicions as to its purity. The results were forwarded to the physicians of the town.

Pollution of a stream at Altoona.

22. A formal complaint of the pollution of a stream by the sewage of the city of Altoona had been received. The secretary stated that he intended, at an early date, assisted by Mr. H. Murphy, chairman of the Committee on Water Supply and Drainage, to personally examine the drainage system of this city. In this connection, a communication from Mr. S. C. Baker, of Allegheny Furnace, was presented, complaining that injustice had been done him in the publication of a communication from the Altoona school board. The Board decided that as no expression of opinion had been made, it had incurred no responsibility. The communication was ordered on file.

Epidemic of diphtheria at Tidioute.

23. In consequence of an epidemic of diphtheria at Tidioute, the secretary had, by request, instructed the burgess that he had power to order the public schools to be temporarily closed.

Typhoid and malarial fevers at Beaumont.

24. A complaint that typhoid and malarial fevers prevailed at Beaumont was investigated by Medical Inspector Taylor, by correspondence. Circulars were sent to physicians in the district for distribution and, as it appeared the report was exaggerated, further action was not deemed necessary.

Report of leprosy at Pittsburgh.

25. A report that a case of leprosy existed in Pittsburgh, was, on inquiry of the health officer of that city, found to be false, the disease having been subsequently diagnosticated as scurvy.

Increase of blindness in United States.

26. A communication from the Sydenham Medical Coterie of Philadelphia on the subject of increasing blindness in the United States was presented and referred to the committee for publication at its discretion.

Typhoid fever in East Reading.

27. A report to the effect that typhoid fever prevailed to an alarming extent in East Reading was investigated

by Medical Inspector W. Murray Weidman, who reported that the sickness was caused by impure water, and was confined to one ward. Steps were being taken by the city board of health and councils to remedy the matter.

Pollution of Beaver river.

28. The Hartman Manufacturing Company of Beaver Falls, and other prominent corporations, had recently reported a serious contamination by salt water of Beaver river. Medical Inspector Thompson was instructed to investigate, and reported that the contamination was caused by the overflow of a number of oil wells in Butler county, principally abandoned. The pollution was such as to interfere with the use of the water for drinking. The secretary had requested to be furnished with certificates from physicians that, in consequence of the disuse of this water, the water from old wells to which the people were compelled to resort, was causing sickness, before taking further action. He was still awaiting the receipt of these.

Typhoid fever at Auburn, Schuylkill county.

29. A report that typhoid prevailed at Auburn, Schuylkill county, led to an inquiry which revealed the fact that cases of malarial fever were being caused by the foul condition of the old canal running through the place. The secretary had notified the canal company to abate this nuisance.

Poisoning of mill-race at Pottstown.

30. A complaint that a mill race at Pottstown was being poisoned, killing large numbers of fish was, on investigation by Medical Inspector, Wm. B. Atkinson, found to have very slight foundation, and the matter was referred back to the fish warden.

Diphtheria at Middletown, Dauphin county.

32. Information that diphtheria prevailed at Middletown, Dauphin county, having been recently received, the secretary advised the authorities to close the public schools, and had sent circulars for distribution detailing other steps to prevent the spread of the epidemic. The burgess accordingly ordered the closure of the schools.

Diphtheria at Waterville.

33. It being reported by the medical officer of health of Jersey Shore, Dr. Cline, that diphtheria was prevalent at Waterville, Medical Inspector E. D. Payne, was directed to investigate the matter. He reported after having made inquiries by correspondence, the disease to be on the decline, there had been six deaths, and sixteen cases had recovered, out of a population of ninety. The epidemic was supposed to be a result of the June flood of 1889.

Cholera in Bergholtz, Ohio.

34. A report that a case of cholera had occurred in Bergholtz, Ohio, was, on inquiry of Dr. C. O. Probst, secretary Ohio Board, found to be false, the case having been one of cholera morbus following a debauch.

Sickness in Wallingford.

35. On complaint that much sickness of a suspicious character prevailed at Wallingford, Delaware county, Medical Inspector Wm. B. Atkinson was instructed to inspect the region referred to. He reported defective drainage on several properties and other nuisances. The secretary had caused notices to be served on the respective owners to abate these nuisances. Several cases of typhoid fever had occurred, but the health of the district was now improving.

Milk supply of Winfield, Montgomery county.

36. A complaint having been received that, owing to the feeding of milch cows on fermented brewers' grains, the value of the milk supply in the neighborhood of Linfield, Montgomery county, was being seriously injured, the subject had recently been thoroughly inquired into by the secretary. He had communciated with the secretary of the State Board of Agriculture of Pennsylvania, and the food commissioner of New Jersey, Dr. Newton, on the subject. The result arrived at was that while "grains" in a sweet, fresh condition were not unwholesome food, if they were allowed to ferment to a serious extent, and become putrid, they were injurious to the milk. He had therefore cautioned the parties implicated against selling brewers' grains unless they were fresh, and precautions were taken to prevent putrefaction.

Inspection of Anderson purifying system.

37. The secretary, accompanied by some of the members of the Board, had recently, on invitation of Mr. Devonshire, agent for the system in this country, in company with the boards of trade and of health of the city of Philadelphia, inspected the Anderson water purifying system at Lardner's Point pumping station on the Delaware river; while the operation of the apparatus during the short period of the inspection appeared satisfactory, the secretary did not feel that the Board should commit itself to an endorsement of this or any other special system.

Typhoid fever at Bethlehem.

38. The number of typhoid fever cases and deaths in and near Bethlehem had recently appeared to the secretary as unusually large. Medical Inspector Chas. McIntire had made two or three partial reports, and had been instructed to make a full examination and report on the whole district.

39. Diphtheria had recently been seriously prevalent at Pen Argyl. Four hundred and fiftv precautionary circulars had been sent to the local board for distribution, and the authorities were using their best efforts to stamp out the disease.

Diptheria at Pen Argyle.

40. The drainage of the Devon Inn, Devon, did not yet appear to be satisfactory. Medical Inspector Atkinson on a recent visit had found a considerable stream entering the brook from the old drainage system. A fuller report on this subject would be received from the Committee on Water Supply and Drainage.

Drainage at Devon Inn.

41. A complaint that typhoid fever prevailed at Dauphin, owing to insanitary conditions was investigated by Medical Inspector Hartman. He reported several serious nuisances. The secretary had sent notices for abatement which had been served on the parties by the burgess with excellent results.

Typhoid fever at Dauphin.

42. The secretary had received a complaint from Shade Valley, Huntingdon county, that typhoid fever prevailed there owing to insanitary conditions. Medicla Inspector Brumbaugh had been instructed to investigate. He had not reported up to the present time.

Typhoid fever Shade Valley, Huntingdon co.

43. The secretary read an extract from a judicial decision on the pollution of a stream in the case of Albertson *v.* Philadelphia, and asked permission to insert the decision in full in the annual report.

Albertson vs. Philadelphia.

44. A complaint from the authorities of Newville, regarding the pollution of a dam, was investigated by Medical Inspector R L. Sibbet; he reported a stream known as the "Big Spring" as being in a foul condition, and choked with weeds and refuse. The secretary had caused notices to be served on all parties whose properties bordered on the stream instructing them to remove all filth and weeds, and in addition ordering the owners of the dam to drain the same at frequent intervals.

Pollution of dam at Newville.

45. A complaint from Dr. Bishop, surgeon to the Pennsylvania Railroad Company, that typhoid fever prevailed at State Line, was investiged by Medical Inspector C. L. Gummert. He reported that the disease was and had been more prevalent across the border in Maryland than at State Line. The disease was dying out and there appeared to be no cause for intervention on the part of the Board. These facts were communicated to the complainant.

Typhoid fever at State line.

Hog cholera at Brownsville.

46. The secretary had received information from Medical Inspector C. L. Gummert, of Brownsville, that hog-cholera was seriously prevalent in that place, and that diseased hogs were being shipped to Pittsburgh and other places. He at once wired the secretary of the State Board of Agriculture this information, who instructed a state veterinarian and special agent of his Board, to investigate with Dr Gummert; animals found diseased were killed and buried, the pens quarantined and thoroughly disinfected and the healthy animals removed.

Garbage dump at Bethlehem.

47. Complaints had been received that the garbage dump of Bethlehem was causing sickness in a neighboring borough. Medical Inspector Chas. McIntire reported the necessity of certain precautions being adopted. The burgess had informed the secretary that these would be complied with.

Croup to be reported as an infectious disease.

48. Dr. C. B. Dudley, on behalf of the board of health of Altoona, had asked for instructions in regard to placing croup among the infectious diseases required to be returned by physicians. The secretary replied that true or membranous croup was now considered by sanitarians to be identical with diphtheria and should therefore be required to be reported.

Request for information as to disposal of garbage.

49. Dr. L. Balch, secretary of the State Board of Health of New York, had requested information with reference to the method of disposal of garbage in Philadelphia. The secretary had advised him, after inquiries at the health office, that there was no system, and that the health officer considered this fact to be responsible for much disease.

Importation of Spanish rags prohibited by British Government.

50. The secretary had recently observed that the British Government had prohibited the importation of rags from Spanish ports, in consequence of the existence of cholera in that country. Copies of the British regulations were presented with the suggestion that it would be well for the Board to recommend similar action to our own quarantine authorities. The subject was referred to new business for further consideration and action.

Insanitary conditions at Punxsutawney.

51. A report having been reçeived that the sanitary condition of Punxsutawney was bad, Medical Inspector S. M. Free had been directed to investigate. He reported the condition of the town as most deplorable and advised that all the present wells be abandoned, as well

as the hole-in-the-ground privies and suggested other important measures of reform. The secretary had communicated these precautions to the burgess.

Inspection at Horatio.

52. Dr. Free had also inspected the mining village of Horatio, a short distance higher up on the same stream with precisely similar results. His recommendations had been communicated to the residents and to the owners of the mines.

Inspection at Apollo.

53. Medical Inspector W. E. Matthews had received instructions to inspect Apollo, Armstrong county, the sanitary condition of which had been reported to the Board. He reported the conditions of the borough as being excessively filthy, and called attention to many nuisances. There had not been time to take further action in regard to this matter as yet.

Typhoid fever at Mansfield.

54 A complaint that typhoid fever prevailed in a block of houses at Mansfield Valley had been received from Dr. F. R. McGrew. The occupants of the place had all used water from one well. The secretary had replied asking if the tenants would be willing to bear the expense of having the water analyzed. No reponse had yet been received.

Use of canned foods.

56. Considerable uneasiness having been manifested in regard to the possible dangers arising from the use of tin canned foods, as indicated by an article in the "Annals of Hygiene," the secretary had made careful inquiries into the subject and embodied them in an article which had appeared in the "Annals" and which was now submitted. His conclusions were that poisoning from this cause was very rare, and that the preservation of food in this manner offered a valuable resource in many conditions.

Leprosy at Chester.

56. A case of leprosy had recently been discovered at Chester. Medical Inspector Atkinson had been instructed to visit the County Home at Lima, Delaware county, where the patient had been isolated. He reported that the case had been seen by eminent dermatologists and was undoubtedly suffering from the anæsthetic form of the disease. The county authorities were desirous of getting rid of the man, and the secretary had addressed a communication to the Supervising Surgeon General of the U. S. Marine Hospital Service, Dr. John B. Hamilton, requesting that, as the patient had never been naturalized, he be returned to his native

country, Sweden. There is a probability that this course will be taken.

Diphtheria at Lenni.

57. Diphtheria had recently prevailed to so serious an extent in and near the manufacturing village of Lenni, Delaware county, and the conditions were discovered by Medical Inspector Atkinson, to be so filthy, and the disregard of sanitary precautions so general, that the secretary had considered it necessary to issue a proclamation in the name of the Board declaring the disease epidemic in certain townships. This proclamation had been published in the local newspapers and posted near all public buildings and at cross roads. The epidemic was already on the wane.

Burial of hogs dead of cholera.

58. Unburied hogs, dead of cholera, had led to a complaint from Vira, Mifflin county. Their burial had been ordered.

Nuisance at Patterson.

59. A nuisance in the shape of a leaking cesspool in the town of Patterson, Juniata county, had led to much correspondence between the secretary and the attorneys for the estate. After considerable delay the secretary notified them if this were continued they would be considered in contempt of the order of the Board, when assurances were given that the orders would be complied with. Two inspections were made in this case by Dr. A. B. Brumbaugh, medical inspector for the Juniata district.

Complaints of nuisance.

60. Complaints of minor nuisances had been received from the following places: Mifflin, Juniata county; Wayne, Erie county; Cobb's Creek, Montgomery county; Tusseyville, Centre county; East Latrobe, Westmoreland county; Meyersdale, Somerset county; Catasauqua, Lehigh county; McKee's Rocks, Allegheny county; Berwyn, Chester county. In each instance the customary form had been sent requiring the affidavit of ten householders, and nothing further had been heard from the complainants.

Invitation to attend Seventh International Congress at London.

61. An invitation to the Board to attend or send delegates to the Seventh International Congress of Demography and Hygiene at London, in the month of August, 1891, was received from Dr. John S. Billings, U. S. army, member of the International Permanent Committee. It was referred to new business.

Invitation to attend eighteenth annual meeting at Charleston, S. C.

62. An invitation to the Board to attend, or send delegates to, the eighteenth annual meeting of the American Public Health Association at Charleston, South

Carolina, December 16, 17, 18 and 19, 1890, was presented. It was also referred to new business.

63. The circular on the "Danger of Public Funerals in the Case of those who have Died of Communicable Diseases," which the secretary was instructed at the last meeting to address to the clerical profession, was presented. It had been already largely circulated. Danger of public funerals.

64. The circular on the disposal of the sewage of public edifices, which the secretary had been instructed, at the last meeting, to prepare and distribute to all state and county institutions, and the trustees and officers thereof, was presented. This was also now in process of distribution. Sewage of public edifices.

65. The circular defining the duties of funeral directors, undertakers and nurses, in the case of contagious diseases, which the secretary had been instructed to prepare, at the last meeting, was presented for the consideration of the members, who were requested to take copies of it home with them and return them with suggestions and amendments. Duties of funeral directors.

66. The financial report showed the receipts during the year to have been $3,000.00, and the disbursements $2,919.16, of which $1,423.12 was for incidental expenses of the secretary and office and the remainder for traveling expenses of members, inspections, analyses and conventions. Financial report.

67. The number of written communications sent since the last annual meeting had been 1,835 and the number received, 1,960. Communications sent and received.

68. The total number of circulars distributed during the same period had been 22,028. Circulars distributed.

69. The additions to the library had been of books received as exchanges and donations, 44; purchased, 13; of pamphlets received, 191. This concluded the secretary's report, which was, on motion, adopted and the action of the secretary as detailed approved. Addition to library

The Board then adjourned, to meet at the Bolton House, at 8.30 P. M.

At 8.30 P. M. the Board reconvened according to adjournment, the president, Dr. Geo. G. Groff, in the chair.

Reports of standing committees being in order, Dr. Pemberton Dudley, chairman, submitted the report of Reports of standing committee.

the Executive Committee showing that since the last regular meeting of the Board one stated and one special meeting had been held, when bills to the amount of $907.75 had been audited and approved, covering vouchers No. 388 to No. 408.

The report was accepted and the bills approved.

Dr. Benjamin Lee, chairman of the Committee on Vital Statistics, reported that since the last meeting the register of physicians in Pennsylvania had been issued. The committee advise that it be not attempted to issue this register annually. Once in three years will probably be as often as expedient. The report was accepted, and suggestion adopted.

Dr. Joseph F. Edwards, chairman of the Committee on Preventable Diseases and the Supervision of Travel and Traffic, presented a carefully written report on the dangers arising from filthy street cars, indiscriminate admission of children into schools, and neglect of provision of bathing facilities for domestic servants.

It was accepted and ordered to be referred to the secretary for publication.

Dr. McClelland, chairman of the Committee on School Hygiene and Public Institutions, presented a verbal report which he requested to be allowed to supplement with a written report to be handed to the secretary in time for publication. The report was accepted, and permission accorded.

Dr. S. T. Davis, chairman of the Committee on Sanitary Legislation, Rules and Regulations, having been compelled to withdraw after the afternoon session, had left a written report in the hands of the secretary which was read.

The report recommended that efforts be made to procure legislation during the coming winter to prevent the pollution of streams, and to establish sanitary organization throughout the commonwealth. The report was accepted and its recommendations adopted.

Mr. Howard Murphy, C. E., chairman, presented the report of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines. The subjects referred to were the drainage system of the Devon Inn, the drainage of the city of Altoona, and the Anderson system of water purification. The report was accepted.

Dr. Pemberton Dudley, chairman of the Committee on

Adulterations, Poisons, Explosives and other Sources of Danger to Life and Limb, replied that he had been in correspondence with Prof. Leffmann, with regard to certain adulterants and would place the results in the secretary's hands at a future time if permission were granted. The report was accepted and the request granted.

New business. New business being now in order, the subject of restricting the importation of Spanish rags was called up and the following resolution passed:

Resolved, That the State Board of Health of Pennsylvania recommends to the health authorities of all ports of entry in the commonwealth, the passage of a regulation forbidding the importation of rags from any Spanish port, or of rags which there is reason to suppose may have been gathered in Spain, for a period of one year from the present time.

Old canal beds. The subject of the condition of old canal beds was then called up. The decision of the Board was that it was expedient to treat each case as it came up, rather than to attempt to formulate any rule for the management of the whole system.

Action was deferred until a subsequent meeting, in reference to sending a delegate to the Seventh International Congress of Demography and Hygiene.

In reference to the approaching meeting of the American Public Health Association, the secretary was instructed to issue credentials to any member desiring to attend.

The appointment of standing committees for the ensuing year being in order, the president announced that the organization of the committees would remain as during the year passed.

They will therefore be as follows:

I. *Executive Committee*—Pemberton Dudley, M. D., chairman, Howard Murphy, C. E., Joseph F. Edwards, M. D., and Benjamin Lee, M. D., secretary.

Place of meeting: Executive office, 1532 Pine street, Philadelphia.

Secretary's address: 1532 Pine street, Philadelphia.

II. *Committee on Registration and Vital Statistics*—Dr. Benjamin Lee and Dr. Saml. T. Davis.

Bureau of Registration of Vital Statistics: Department of Internal Affairs, State Capitol, Harrisburg.

State Superintendent of Registration of Vital Statistics: Benjamin Lee, M. D.

Registrars of Marriages: All clerks of Orphans' courts.

Registrars of Practitioners of Medicine and Surgery: All Prothonotaries.

III. *Committee on Preventable Diseases, Disinfection, and Supervision of Travel and Traffic*—Dr. Joseph F. Edwards and Dr. Pemberton Dudley.

IV. *Committee on Water Supply, Drainage, Sewerage, Topography and Mines*—Mr. Howard Murphy, C. E., and Dr. J. H. McClelland.

V. *Committee on Public Institutions and School Hygiene* – Dr. J. H. McClelland and Mr. Howard Murphy, C. E.

VI. *Committee on Adulterations, Poisons, Explosives and other Special Sources of Danger to Life and Limb*—Dr. Pemberton Dudley and Dr. Joseph F. Edwards.

VII. *Committee on Sanitary Legislation, Rules and Regulations*—Dr. Samuel T. Davis and Dr. Pemberton Dudley.

The secretary then presented accounts amounting to $748.83, representing vouchers No. 392 to No. 408 which had been audited and approved by the Executive Committee. They were approved and ordered to be paid.

On motion, Altoona was determined upon as the next place of meeting for the Board, in May, 1891, and also as the place for holding a sanitary convention at the same time.

Dr. Charles B. Dudley, medical inspector for the central district, was appointed chairman of the local committee of arrangements with power to name the other members of the committee; and Drs. Davis and McClelland were appointed a committee on sanitary convention at Altoona, to co-operate with Dr. Dudley.

The subject of the relations of the "Annals of hygiene" to the Board being called up, it was deemed expedient that the statement on the cover of that journal be changed to read as follows:

"This journal publishes the papers and proceedings of the State Board of Health of Pennsylvania."

The secretary requested the members to furnish him, at their convenience, with their suggestions and criticisms as to the proposed scheme of nomenclature of diseases which had been placed in their hands.

The meeting then, on motion, adjourned *sine die.*

(Signed) BENJAMIN LEE,
Secretary.

PART II.

APPENDICES.

PART II.

APPENDICES.

APPENDIX A. Reports of Standing Committees.
APPENDIX B. Reports of Inspections.
APPENDIX C. Annual Reports of Cities and Towns.
APPENDIX D. Meterological Observations.
APPENDIX E. Reports of Conferences and Conventions.
APPENDIX F. Circulars and Forms.
APPENDIX G. Third Annual Report of the State Pharmaceutical and Examining Board.
APPENDIX H. Quarantine, Disinfection, Epidemics and Special Sources of Disease.
APPENDIX I. Correspondence.
APPENDIX K. Complaints and Orders for Abatement of Nuisances.
APPENDIX L. Sanitary Laws of Pennsylvania Passed in 1889.
APPENDIX M. Occasional Circulars in Cyclostyle.
APPENDIX N. By Laws, Organization and Regulations of the Board.
APPENDIX O. Additions to the Library.

APPENDIX A.

REPORTS OF STANDING COMMITTEES.

1. **Report of Executive Committee, Pemberton Dudley, M. D., Chairman.**
2. **Report of Committee on Registration and Vital Statistics, Benjamin Lee, M. D., Chairman.**
3. **Report of Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic, J. F. Edwards, M. D., Chairman.**
4. **Report of Committee on Water Supply, Drainage, Sewerage, Topography and Mines, Howard Murphy, C. E., Chairman.**
5. **Report of Committee on Public Institutions and School Hygiene, J. H. McClelland, M. D., Chairman.**
6. **Report of Committee on Sanitary Legislation, Rules and Regulations, George G. Groff, M. D., Chairman.**

1—REPORTS OF EXECUTIVE COMMITTEE.

PHILADELPHIA, *May* 8, 1890.

The Executive Committee begs leave, respectfully, to report that since the last regular meeting of the Board it has held a regular meeting February 19, 1890, an adjourned meeting February 22, 1890, and a special meeting May 8, 1890. Accounts represented by vouchers No. 305 to No. 359 inclusive, amounting to $1,435.92, have been audited and approved.

At the adjourned meeting held February 22 the secretary presented vouchers for expenditures made in connection with the Johnstown disaster, and was instructed to address a communication to Attorney General Kirkpatrick, inquiring what the exact status and responsibility of the Board and of its individual members would be after endorsing these vouchers. At the meeting of May 8, the secretary reported that he had consulted the Attorney General as directed. His reply was that this act would simply be a declaration on the part of the Board that they considered the expenditures justifiable and believed the accounts to be correct, and would not involve either the Board or any of its members in any pecuniary responsibility

Respectfully submitted.

PEMBERTON DUDLEY,
Chairman Executive Committee.

PHILADELPHIA, *July* 10, 1890.

The Executive Committee begs leave, respectfully, to report that since the last regular meeting of the Board it has held one regular and one special meeting.

At the regular meeting, held Wednesday, May 28, 1890, at the executive office, vouchers No. 360 to No. 376, inclusive, were audited, approved, and referred to the Board. These vouchers amounted to $316.81.

At the special meeting, held at Harrisburg, July 10, 1890, bills amounting to $289.02 were audited and approved, representing vouchers No. 377 to No. 387, inclusive.

The secretary presented a letter from Attorney General Kirkpatrick, expressing the opinion that the action of the Board in auditing and approving bills for work done and material furnished at Johnstown, could in no way be construed into a violation of the law which forbade the Board to make expenditures in excess of its annual appropriation.

PEMBERTON DUDLEY,
Chairman Executive Committee.

November 13, 1890.

The Executive Committee begs leave, respectfully, to report that since the last meeting of the Board it has held one regular and one special meeting. At the regular meeting, held August 30, 1890, bills were approved amounting to $158.92, and representing vouchers Nos. 388 to 391, inclusive. At the special meeting, held November 13, 1890, bills were approved amounting to $748.83, covering vouchers numbered 392 to 408, inclusive.

PEMBERTON DUDLEY,
Chairman Executive Committee.

2.—REPORT OF COMMITTEE ON REGISTRATION AND VITAL STATISTICS.

Your committee begs leave, respectfully, to report that it has devoted especial attention to the subject of the proper form of mortuary reports, and has held conferences with Dr. William H. Ford, president of the board of health of the city of Philadelphia, and of Dr. Charles W. Dulles, chairman of a special committee on vital statistics of the Philadelphia County Medical Society, in order to avail itself of the benefit of the opinions of these eminent gentlemen and to avoid the risk of making suggestions, which might encounter practical obstacles.

The result of such study and conference has been the conculsion that, in order to secure better vital statistics, the first thing to be done is to define the duty of physicians, and afterward to inquire what methods we may with propriety ask health authorities to adopt, in order to insure greater exactness and convenience of reference in the tabulated statements of boards of health.

Physicians should understand that they ought to report, as to the cause of death: (1) the disease with which the patient was afflicted; (2) any complication of moment; and (3) the immediate cause of death. As to the first, the plain truth should be stated, and no evasion should be made out of regard to a natural wish of relatives to hide what may not be pleasant. Further, the physician should avoid the unqualified use of vague expressions, such as "heart-failure," "convulsions," "bowel-complaint," etc., and should try to state the precise disease in scientific terms. It is important also to mention complications: such as endocarditis with rheumatism, and strangulation with hernia. The physician should likewise distinguish between the disease and the immediate cause of death; as, for example, where typhoid fever leads to hemorrhage in the bowels and this to death, the latter should be named as well as the former; or, in a case in which rheumatism was complicated with pericarditis, and the immediate cause of death was hydropericardium, the report should state all these facts.

The physician should endeavor to restrict himself to terms approved by the board of health in making his reports, and to do all he can to aid the board in securing accurate and trustworthy statistics.

These duties of physicians your committee has thought it proper to dwell upon before asking your attention to the suggestions which they propose to you to make to health authorities in regard to the collection and publication of vital statistics. These suggestions are as follows:

1. The reports of deaths should be tabulated week by week according to the date of death, and not of interment (as at present done.)

2. No burial, cremation, or removal of a body should take place until after a permit has been granted by the proper health officer, and the permit should not be granted until a satisfactory death certificate has been deposited at the health office.

3. The blank book containing forms of certificates should contain a list of terms to be used by physicians in reporting causes of death.

4. Each blank certificate shall provide space for the —

    1. Name of deceased (full name).
    2. Color of deceased.
    3. Sex of deceased.
    4. Age of deceased (years, months, days).
    5. Social condition of the deceased (single, married, widowed).
    6. Residence of deceased (ward, street and number).
    7. Date of death.
    8. Cause of death { Disease. / Complication. / Immediate cause of death.
    9. Duration of last illness.
    10. Name and address of physician signing the certificate.

It is suggested that the form of blank be made out somewhat as follows. Each blank shall be divided into three divisions:

1. For the undertaker's certificate.
2. For the permit of burial.
3. For the physician's certificate.

Such a certificate should be first filled out in his part by the physician. It shall then be taken to the health office by the undertaker. Here a registration number should be marked on each part of the certificate (the same number being used for each part), and the physician's certificate should be detached and kept by the proper officer for registration and reference. The permit should then be filled out and given to the undertaker, who should detach it and present it to the superintendent of the place in which burial (or cremation) is to take place. The undertaker's certificate should have blank to contain the —

1. Name of deceased.
2. Nationality of deceased.
3. Residence of deceased.
4. Date of death.
5. Name of physician in attendance at death.
6. Date of burial (or cremation).
7. Place of burial (or cremation).
8. Name and address of the undertaker.

This certificate should be filled out by the undertaker and should be returned to the health office immediately after the burial or cremation has taken place. The permit should be retained by the proper officer of the place of burial or cremation.

In order to secure greater accuracy in returning the causes of death, it has been proposed above to suggest to the board of health to print in every book of blanks for death certificates a list of terms approved by the board for use in tabulating vital statistics, and your committee has prepared such a list, arranged largely after the one approved by the Royal College of Physicians of England. This plan has been adopted for three reasons; one is, that this is in conformity with the plan of vital statistics adopted by the United States Census Bureau; another is, that the list referred to is an admirable and thoroughly scientific one; and the third is, that to follow such an authoritative lead will tend toward greater uniformity with other communities, while any attempt to prepare an entirely original list would tend to increase the variety which now unfortunately exists among communities equally anxious to do what is best.

The list which your committee proposes, and which is included in the report as an *Appendix*, is very full; and, without pretending to be the expression of final views as to pathology, it is believed to represent quite fairly the opinions at present prevailing in regard to the proper classification of diseases.

With a careful and conscientious use by physicians of the terms contained in the list, it will be easy for the board of health to collect accurate vital statistics for the use of scientific men, and also to prepare from them and to publish in plain terms—as the law requires—intelligible reports for the use of the people.

These suggestions your committee submits for your consideration, hoping that they may furnish the Board with a basis of action which may lead to some improvement in the collection and preservation of vital statistics in this state.

The taking of the decennial census by the United States Government appeared to your committee to afford an excellent opportunity for obtaining definite information in regard to the physically defective classes. It, therefore, took pains, by correspondingwith the authorities at Washington, to obtain such assurances of absolute secrecy with regard to returns, as would enable physicians to feel that they could make them without the slightest fear of violating professional confidence.

This information was imparted in a cyclostyle circular to all physicians in the state, it is hoped, with the result of furthering the governmental inquriy. The correspondence will be found in appendix B to the report of the committee. The Register of Physicians of the state is now published. The committee does not hold itself responsible for the character of the physicians registered, but only for the fact that the register is a correct copy of the lists in the offices of the prothonotaries.

Respectfully submitted.

BENJAMIN LEE, *Chairman.*
SAMUEL T. DAVIS.

APPENDIX A.

TO REPORT OF COMMITTEE ON REGISTRATION AND VITAL STATISTICS.

A LIST OF TERMS PROPOSED FOR USE IN MAKING OUT RETURNS OF DEATH.

CAUSES OF DEATH.

I. GENERAL DISEASES.

A. CAUSED BY MORBID POISONS.

1. Communicable.
    - *a*. From one human being to another (whether directly or indirectly.)
    - *b*. From domestic animals to human beings.
2. Conveyed in the air or food.

B. CAUSED BY OTHER EXTERNAL AGENTS.

1. Parasites.
2. Physical agents.

C. CONNECTED WITH STAGE OF DEVELOPMENT OR DECLINE.

1. Infancy.
2. Old age.

D. CAUSED BY PERVERTED OR DEFICIENT NUTRITION.

II. LOCAL DISEASES.

A. DISEASES OF THE NERVOUS SYSTEM.
B. DISEASES OF THE CIRCULATORY SYSTEM.
C. DISEASES OF THE RESPIRATORY SYSTEM.
D. DISEASES OF THE DIGESTIVE SYSTEM.
E. DISEASES OF THE URINARY SYSTEM.
F. DISEASES OF TRE LYMPHATIC SYSTEM.
G. DISEASES OF THE GENERATIVE SYSTEM OF THE FEMALE.
H. DISEASES OF THE OSSEOUS AND MUSCULAR STRUCTURES.
I. DISEASES OF THE TEGUMENTARY SYSTEM (SKIN AND CONNECTIVE TISSUE).
J. VIOLENCE.
K. POISONING.

1. Acute.
2. Chronic.

L. UNKNOWN OR UNCLASSIFIABLE.

I. GENERAL DISEASES.

A. 1. *a.*

1. Cholera Asiatic, epidemic.
2. Consumption, pulmonary.
3. Croup, diphtheritic.
4. Diphtheria.
5. Dysentery, epidemic.
6. Enteric (typhoid) fever.
7. Erysipelas. (Seat and cause.)
8. Leprosy.
9. Measles.
10. Mumps.
11. Phagedæna.
12. Pyæmia. (Cause.)
13. Septicæmia. (Cause.)
14. " (puerpera.)
15. Scarlet fever scarlatina.
16. Small-pox.
17. Syphilis, hereditary.
18. " acquired.
19. Typhus.
20. Whooping-cough.
21. Yellow fever.

A. 1. *b.*

22. Glanders, Farcy.
23. Rabies.
24. Splenic fever—malignant pustule, anthrax. (Seat, cause.)
25. Tubercle. (Location, except in lungs).

A. 2. 26. Cerebro-spinal fever—epidemic cerebro-spinal meningitis
27. Cholera infantum.
28. " morbus.
29. Diarrhœa, epidemic.
30. Dengue.
31. Influenza. (Mode of death.)
32. Malarial fever—intermittent.
33. " cachexia.
34. Relapsing fever.

B. 1. 35. Parasites.
    a. Intestinal worms.
    b. Flukes.
    c. Trichina spiralis.

B. 2. 36. Physical agents.
    a. Sunstroke.
    b. Heat-exhaustion.
    c. Frost-bite.
    d. Lightning.

C. 1. 37. Birth, premature. (Cause.)
38. " preternatural (manner of).
39. " still.
40. Debility, hereditary.
41. Icterus neonatorum.
42. Malformation (cyanosis).
43. Trismus nascentium.

C. 2. 44. Debility, senile.
45. Gangrene "

D. 46. Alcoholism—delirium tremens.
47. Anæmia.
48. Diabetes mellitus.
49. Goitre, exophthalmic—Graves' disease, Basedow's disease.
50. Gout. (Seat.)
51. Inanition.
52. Hæmophilia.
53. Leucocythæmia.
54. Purpura hemorrhagica.
55. Rheumatism, acute. (Seat.)
56. " chronic.
57. Scrofula. (Seat.)
58. Scurvy.
59. Tumors, benign. (Variety and seat.)
60. " malignant, cancer. (Variety and seat.)

II. LOCAL DISEASES.

A. Nervous system.

1. Abscess of the brain.
2. Anæmia "
3. Apoplexy, or hemorrhage of the brain.

4. Chorea.
5. Congestion of the brain.
6. Convulsions.
7. Effusion of the brain.
8. Embolism "
9. Epilepsy.
10. Inflammation of the brain.
11. " " brain and its membranes.
12. " " membranes of the brain and spinal cord.
13. " " spinal cord.
14. " " spinal cord and its membranes.
15. " " membranes of the spinal cord.
16. Insanity. (Variety and mode of death.)
17. Laryngismus stridulus.
18. Mania, acute.
19. Sclerosis of the spinal cord.
20. " (Variety and cause.)

B. Circulatory system.

1. Aneurism. (Location, and mode of death.)
2. Angina pectoris.
3. Dilatation of the heart.
4. Dropsy. (Variety and cause.)
5. Embolism—thrombus, heart-clot.
6. Fatty degeneration of the heart.
7. Hypertrophy of the heart.
8. Inflammation of the heart.
    - *a.* Endocarditis.
    - *b.* Pericarditis.
9. Inflammation of veins. (Cause.)
10. Syncope.
11. Valvular disease of the heart. (Seat.)

C. Respiratory system,

1. Abscess of lung.
2. Asthma.
3. Congestion of lungs.
4. Emphysema.
5. Gangrene of lung.
6. Hemorrhage of lung.
    - *a.* Apoplexy.
    - *b.* Hæmoptysis.
7. Inflammation of bronchial tubes (chronic or acute).
8. " larynx or trachea (chronic or acute).
9. Œdema of the glottis.
10. Pleurisy, empyema.
11. Pneumonia.

D. Digestive system.

1. Abscess of the liver.
2. Ascites. (Cause.)
3. Amyloid degeneration of the liver.
4. Cirrhosis of the liver.
5. Congestion of the liver.

6. Constriction of the œsophagus.
7. Hemorrhage of the nose.
8. " " stomach.
9. " " bowels.
10. Hernia. (Variety, and mode of death.)
11. Inflammation of the mouth—gangrenous stomatitis.
12 " " throat.
    a. Putrid sore throat.
    b. Tonsillitis—quinsy.
13. Inflammation of the stomach—gastritis.
14. " " stomach and bowels—gastro-enteritis.
15. " " bowels—enteritis.
16. " " cæcum—typhlitis.
17. " " colon—entero-colitis.
18. " " peritoneum—peritonitis.
19. Intussusception of the bowels.
20. Jaundice.. (Cause, and mode of death.)
21. Obstruction of the bowels.
22. Pancreas, diseases of.
23. Ulcer of the bowels—perforation.
24. " " stomach.

E. Urinary system.

1. Abscess of kidney.
2. Amyloid degeneration of kidney.
3. Calculus, urinary.
4. Hypertrophy of the prostate gland.
5. Inflammation of kidney (acute—albuminuria).
6. Inflammation of kidney (chronic—chronic albuminuria, Bright's disease).
7. Inflammation of the bladder—cystitis, pyelitis.
8. Suppression of urine—uræmia. (Cause, and mode of death.)
9. Supra-renal capsule, disease of—Addison's disease.

F. Lymphatic system.

1. Abscess of the spleen.
2. Amyloid degeneration of the spleen.
3. Inflammation of lymphatics—lymphangitis.
4. Lymphadenoma—Hodgkin's disease.

G. Generative system of the female.

1. Hemorrhage of uterus. (Cause.)
2. Inflammation of uterus. (Variety and cause.)
3. Inflammation of ovary.
4. Pelvic cellulitis.
5. Tumor of uterus. (Variety.)
6. " ovary. (Variety, and mode of death.)
7. Connected with pregnancy.
    a. Abortion. (Cause, and mode of death.)
    b. Childbirth. (Circumstances causing death.)
    c. Extra-uterine gestation.
    d. Placenta prævia.
    e. Premature birth, miscarriage.

- *f.* Puerperal convulsions.
- *g.* " mania.
- *h.* " septicæmia—puerperal fever.

H. Osseous and muscular structures.

1. Abscess.
   - *a.* Abscess of joints.
   - *b.* " middle ear.
   - *c.* " periosteum.
   - *d.* " psoas, lumber, post-pharyngeal.
2. Angular curvature of spine—Pott's disease, spinal caries.
3. Hip disease—morbus coxæ.
4. Necrosis. (Seat.)
5. Osteomyelitis, acute.

I. Tegumentary system.

1. Abscess. (Cause, location, and mode of death.)
2. Carbuncle. (Location.)
3. Lupus. (Location.)
4. Ulcer. (Nature, location, and mode of death.)

J. Violence.

1. Accident. (Nature of lesion.)
2. Homicide. " "
3. Suicide. " "
4. Surgical operation. (Character, and cause of death.)

K. Poisoning.

1. Acute.
2. Chronic.

L. Unknown or unclassifiable.

APPENDIX B.

TO THE REPORT OF THE COMMITTEE ON REGISTRATION AND VITAL STATISTICS.

CORRESPONDENCE IN REGARD TO THE CENSUS OF THE PHYSICALLY DEFECTIVE OF CLASSES.

WASHINGTON, D. C., *May* 15, 1890.

Dr. BENJAMIN LEE.

DEAR DOCTOR: I venture to ask your assistance in making the reports of the census, which is to be taken on the first of next June, as complete as possible in certain matters which are of special interest to the medical profession.

Each census enumerator, in making a list of the living population, is expected to give the name, age, sex, color, occupation, and whether the person is insane, feeble-minded or idiotic, blind, deaf, dumb, crippled, maimed, lame, deformed, or whether so affected with acute or chronic disease or the results of injury as to be unable to pursue his usual business.

It is quite certain that the enumerators' returns will only give imperfect information upon these latter points. Many persons will be unwilling to admit that a member of a family is insane, or feeble-minded, or a deaf mute, even if such is the case, and the reports as to the kinds of sickness affecting persons will also be very unsatisfactory as derived from enumerators' returns.

To remedy this, and to obtain as complete a record as possible of that portion of the population which is more or less physically imperfect or disabled, I ask every physician in the United States to fill out lists of names on the forms herewith inclosed and return them to this office, where they can be compared with the lists furnished by the enumerators.

Will you please, therefore, fill out these lists for the persons of your acquaintance or in whose families you practice, giving the names, etc., of those you know to be insane, feeble-minded or idiotic, blind, deaf and dumb, sick, crippled, maimed, or deformed, and return these schedules in the inclosed envelope, which does not require postage? I have made the items called for as few as possble, in order to give you the least amount of trouble. It is essential to have the name, the sex, the color, and the approximate age, the place of residence, and also the name of the householder of whose family the person is a member, in order to identify the name on the enumerators' lists. If you can give the street and number, this will make it a very simple matter to identify. You need have no fear of duplication, by returning names which other physicians may return, because all returns from the same locality will be carefully compared, and all duplicate returns put aside.

The special information called for on each of these schedules, which pertains more especially to the province of the medical man, is the one in which I am specially desirous of having your statement; that is, for the insane, the form of insanity; for the blind, the nature of the disease which caused the blindness, whether infantile ophthalmia, cataract, glaucoma, amaurosis, etc; for the deformed, the nature of the deformity; the part or limb affected; those suffering from sickness or from the effects of injury, the nature of the disease or injury.

I can offer no pecuniary compensation for the information thus asked, but can only appeal to you as a physician to furnish your quota of help toward making the statistics of the sick and physically defective in the United States more complete and more useful than they have ever been before.

All information which you furnish on these schedules will be considered and treated as strictly confidential. No names will be published, and only the total figures will be given to the press.

It is the intention of the Superintendent of Census to have these figures compiled and published at the earliest possible day. I hope that they will be published within a year after the receipt of the returns.

It is also his intention to have them as widely distributed among the medical profession as the number of copies ordered printed by Congress will permit. For those physicians who furnish the information called for on the inclosed schedules, and who signify to me their desire to obtain a copy of the reports, when published, of the class to which one or more of these schedules refer, I will furnish their names and address to the Superintendent of Census with a recommendation that copies be furnished, when published, and I feel sure that he will comply with the request so far as the number of copies at his disposal will allow.

Hoping that you will be able and willing at once to fill out and forward the inclosed forms of schedules, and assuring you that whatever information you may give will be highly appreciated and properly used, I remain.

Very respectfully, your obedient servant.

JOHN S. BILLINGS,
Surgeon, U. S. A.,
In charge of Vital Statistics and Statistics of Special Classes.

WASHINGTON, D. C., *May* 1, 1890.

Dr. John S. Billings, Surgeon, U. S. A. has been appointed, in compliance with law, as the Special Agent of the Census Office for the collection of vital statistics and statistics of the special classes of population. The special agent thus appointed has all the authority of a census enumerator under the act of March 1, 1889, and is empowered to conduct in his own name all the correspondence relating to these branches of the work.

Very respectfully,

ROBERT P. PORTER,
Superintendent of Census.

APPROVED:
JOHN W. NOBLE
Secretary of the Interior.

PHILADELPHIA *June* 2, 1890.

MR. ROBERT P. PORTER, *Superintendent of Census, Department of the Interior, Washington, D. C.:*

DEAR SIR:—I have received your communciation of May 1st, announcing the appointment of Dr. John S. Billings, Surgeon United States Army, as special agent of the census office for the collection of vital statistics and statistics of the special classes of population, together with a letter from Dr. Billings requesting information on certain points with regard to persons under my professional care. I am extremely desirous, in consequence of my official position as Superintendent of Vital Statistics of the Commonwealth of Pennsylvania, to have these returns as complete and accurate as possible. In conversation with other physicians I find, however, this practical difficulty suggested: It is feared by them, although it is stated that information thus furnished will be treated as strictly confidential, and that no names will be published, and only the total figures given to the press, that nevertheless, should discrepancies occur between their own returns and those of their patients, intimation may, in some way, be conveyed to the latter or their friends, that they have, whether ignorantly or wilfully, made false returns. If I could give an assurance to all the physicians in this State that such apprehension is entirely groundless, I believe that it would greatly enhance the accuracy of this very important department of the census.

Yours very respectfully,

BENJAMIN LEE.
Superintendent of Vital Statistics.

WASHINGTON, *June* 3, 1890.

SIR: I beg to acknowledge your favor of the 2d instant, and in reply to say that you can assure every physician in your State that whatever information they give to this office will be strictly confidential so far as names and residence are concerned. That physicians' returns are to be used only to correct information received from enumerators and *immediately destroyed* as soon as compared: only a few selected clerks will ever see them, and it will be impossible that any information should reach their patients.

Permit me to express my appreciation of your interest in this work, and to assure you that you may pledge this office to fully guard against any personal information being obtained on account of the returns of the physicians.

Very respectfully,

ROBERT P. PORTER,
Superintendent of Census.

BENJAMIN LEE, M. D.,
State Board of Health, Philadelphia, Penna.

PHILADELPHIA, *June* 2, 1891.

Dr. JOHN S BILLINGS, *Surgeon U. S. A., in charge of Vital Statistics, and Statistics of Special Classes, Department of the Interior, Washington, D. C.:*

DEAR DOCTOR: Your communication of May 15th, asking for certain information in regard to persons under my professional care, is received. It is my earnest desire that you should have the hearty co-operation of the medical profession in this state in prosecuting these important inquiries. I find, however, a hesitancy on the part of many physicians to make such returns for fear the information which they give, although treated as confidential, so far as their own names are concerned, may be made use of in instances where the information which they convey differs from that obtained from their patients, for the purpose of incriminating the latter or their friends, or, at least, of making them aware that the bureau had discovered that they had made incorrect returns. As a physician you can appreciate the delicacy of the position, and the sacredness of professional secrets. If you will permit me to assure the physicians in this State that their apprehensions on this score are entirely without foundation. I believe that it would materially enhance the value of your returns.

I have addressed a similar communication to Mr. Superintendent Porter, not being certain whether you are still in the country.

Yours very respectfully,

BENJAMIN LEE,
Superintendent of Vital Statistics.

WASHINGTON, *June* 4, 1890.

SIR:—Permit me to acknowledge your favor of the 2d instant, and in reply to state that the only object in obtaining these returns from physicians is to correct the enumerator's return and under no circumstances will the information received from physicians be used against an individual, but as soon as compared, and enumerator's report corrected, the physician's schedule will be destroyed. They are to be used simply to supplement the information given to enumerators, and in no case will any patient ever know through this office, that a physician ever made a report of his case. The superintendent communicated with you on this subject yesterday, and Dr. Billings, now absent, is fully in accord with him in assuring you that no physician need fear that the information given will be used save in the most confidential manner.

In the absence of Dr. J. S. Billings, special agent,

Very respectfully,

W. H. OLCOTT.
Acting Chief of Division of Special Classes.

BENJ. LEE, M. D.
State Board of Health, Philadelphia, Penna.

PHILADELPHIA, *June* 7, 1890.

To Physicians in Pennsylvania :

An opportunity is afforded in connection with the taking of the census by the United States Government, of obtaining statistical information which cannot fail to be of extreme value to the state, as regards the physically defective classes which compose a portion of its population. The State Board of Health, to which has been confided the duty of superintending the collection of vital statistics in this commonwealth, is desirous that these returns should be as full as possible. The medical profession, of all others, should be the first to appreciate the importance of such information. It has been found, however, in conversation with physicians, that many of them entertain the apprehension that the information which they thus impart, may be used in some manner detrimental to the patient, or individual, to whom it refers. In order to remove any such obstacle to obtaining complete returns, communications were addressed to the Hon. Robt. P. Porter, Superintendent of Census, and Dr J. S. Billings, Surgeon United States Army, in charge of vital statistics and statistics of special classes, asking for a guarantee in addition to that already given, "that all information furnished on their schedules would be considered and treated as strictly confidential, no names being published." To this communciation the following replies have been received.

There can, therefore, be no ground for hesitancy on the part of the profession, on the score of professional delicacy, to furnish the information called for in every particular.

Respectfully,

BENJAMIN LEE, M. D.,

Superintendent Vital Statistics of the Commonwealth of Pennsylvania.

3—REPORT OF THE COMMITTEE ON PREVENTABLE DISEASES AND THE SUPERVISION OF TRAVEL AND TRAFFIC.

The Committee on Preventable Diseases and the Supervision of Travel and Traffic, recognizing that the time has arrived when the apathy and indifference that once characterized the attitude of the public towards matters of a hygienic nature, is rapidly giving way to a just realization of the prime importance of such measures, deems it prudent that this Board should recommend to the incoming legislature the enactment of certain laws, which, we believe, would now be cheerfully received by the people at large. We believe that, if it be not unconstitutional, we should have a law regulating the reception of pupils into private schools, both boarding and day schools, whereby it would be requisite for the principal of any school to require, from a reputable physician, a certificate that any proposed candidate for admission had not been, for a given time prior thereto, exposed to any contagious disease, and we believe that we might even go so far as to ask for the imposition of a heavy fine upon any parent or guardian who would allow a child, under his care, to enter a school, if it had been exposed as indicated above.

We speak advisedly and reflectively when we say that the people of Pennsylvania are now very much alive to the importance of sanitary legislation, and we believe that such a law as we have hinted at above would be cheerfully received and ardently supported by every intelligent parent in this state.

A law that would prevent the letting of an infected house or room prior to its thorough disinfection is a desideratum of the greatest importance, and we have special reasons for believing that such an ordinance could be passed through our legislature; of course we would include in this act the hiring of infected carriages. Would it not seem well to supplement the admirable circular, that has been but recently issued to the clergymen of this state, by our secretary, advising against public funerals of those dead with contagious diseases, by a law absolutely forbidding such needless and dangerous exposure? We are fully aware of the fact that there is a "*sentiment*" involved in this question and that there are some who would oppose a law that prevented them from rendering, as they call it, atribute of respect to the memory of a departed relative or friend; there are some who would regard such a law as a restriction of their personal liberties, but we imagine that if such a law were found upon our statute book, and if it were enforced in a few instances, the sober second thought and good practical common sense of the American people would soon justify its existence.

This committee, about one year ago, had occasion to make a report on "Railway Sanitation," wherein it was demonstrated that, so far as the main lines of steam roads in our state are concerned, there was much to commend from a sanitary point of view. Of course, we did not find perfection, neither had we, nor have we, any right to look for it. But we did find a commendable disposition towards sanitary improvement. At the time we did not take up the question of city horse and cable roads, but we feel now that this Board is urgently called upon to address a word of very timely advice to the management of these corporations. We cannot answer for the rest of the state, but we are quite sure that no decent, respectable, cleanly citizen of Philadelphia, will find fault with us when we characterize most of the street cars in that city as abominations of filth and uncleanliness. Certainly, it is almost nauseating to breathe the atmosphere of one of these cars on a cool day when the windows and doors are closed, while the general aspect of dirt attached to the car itself and its attendants, is enough to act almost as an emetic through the agency of vision. The inherent right to be dirty may be one of the glorious inherent rights of American citizenship, and if so, then an act requiring cleanliness would, we suppose, be unconstitutional, but we honestly and seriously believe that one of the greatest of all acts of sanitary legislation would be an ordinance compelling employers to furnish facilities for, and to require of their employés, at least, a weekly bath, with plenty of soap. This question of street car cleansing is really a serious one, for it is our observation that the street cars of Philadelphia, though apparently as dirty six months ago as it was possible for any dirty thing to be, are yet dirtier to-day than they were then and are daily growing more abominably foul and filthy.

In this connection, it seems well to us that the State Board of Health should agitate a question that, we think, has been too much neglected, namely, the cleanliness of servants and employés. In these days of universal plumbing, we find bathing conveniences, for the family, in even the most modest of homes, yet in how few houses do we ever find a bath tub set aside for the use of the servants. When we stop to reflect that all the food we eat is handled and prepared for our consumption by a woman who has denied to her the facilities for cleanliness, that the kitchen in which this food is kept and cooked is rendered more or less foul by the dirty emanations from the bodies of a number of servants whose bodies are seldom washed, are not such reflections calculated to dull the keenness of one's appetite? Is it possible, that we may be told that this is one of those instances where "ignorance is bliss?" We think not, for we believe there is a real menace to health in such conditions; rather, would it seem wise to us to suggest the importance of providing bathing accommodations for our servants and looking to it that they avail themselves thereof. The same recommendations, it seems to us, might be profitably made to all employers of large bodies of employés. Would it seem like going too far were we to ask our legislature to make it an offense, punishable by heavy fine and imprisonment, for any one who was suffering from or who had been but recently exposed to a contagious disease, to enter a public conveyance, theatre, public hall, church or assemblage of any kind? We imagine that such an ordinance would receive the approving sanction of the people, but if it did not, the newspaper discussion provoked by it would have a most salutary educational effect. Certainly, a man afflicted with homicidal mania, allowed to roam at large, is no more dangerous to his fellow creatures than is the human being who, with the seeds of disease emanating from his body, enters a car or a public hall filled with those who are susceptible of the reception of these seeds. Yet no one questions the propriety of incarcerating the former; why, then, is there not the same good reason for restricting the movements of the latter?

It seems to your committee that in view of the extensive notoriety which has been given by the newspaper press, to the alleged discovery, by Dr. Koch, of Berlin, of an inoculative preventive or curative treatment of consumption, it would not be amiss to make some reference thereto. We should remember and remind our people that it is not yet definitely settled that Koch's bacillus tuberculosis is the cause of consumption. The late Dr. Austin Flint, of New York, a man whose conservative judgment was unequaled, it seems to us very clearly expressed the sum of our accurate knowledge on this subject, when, but a short time prior to his lamented death, he wrote that while it was not proven that this particular bacillus was the cause of consumption, yet when consumption was present the bacillus was always to be found, from which he argued that its significance was rather that of a diagnostic than of an etiological nature. Of course, the information that we have is much too meager, too sensational, and altogether too unreliable for us to formulate an opinion of any value upon Dr. Koch's discovery, but it seems to us that we are warranted and called upon to warn our people not to rashly and precipitately accept newspaper reports. The people should be plainly told that consumption is a preventable disease, but they should feel that it is not likely that there will ever be any "*royal road*" to such prevention; that an immunity from, or a cure of, this terrible disease will never be vouchsafed by the trifling trouble of submission to a specific vaccination or inoculation. They should know that consumption is to be prevented rather by method of life than by a particular specific procedure. Of course, it would be unwise to prejudice Dr. Koch's discovery, but it would be equally unwise to fail to warn the public, always eager for an "easy cure" to suspend judgment for a time.

Your committee has noted with great pleasure the order that has been conspicuously posted in most of the street cars of Philadelphia absolutely forbidding spitting on the floor, such order following closely upon the publication of the fact that sputa was an active agent for the conveyance and dissemination of the seeds of consumption. But your committee is sorry to say that this wise and wholesome order is a dead letter; its enforcement being neglected, as is evidenced by the following extract from the Philadelphia *Press* of a recent date.

A reporter who rode over all the lines of the Traction Company yesterday made a study of the spitters, the conductors and the riders. In twenty cars he saw the rule against spitting violated thirty-five times. He did not see the spitters rebuked by the conductor in a single instance. One of the most striking examples was on car 673, of the Nineteenth and Twentieth Streets branch. An old man with a patch over one eye sat in one of the rear corners. He was well dressed, and looked like a prosperous business man. The car was filled with ladies, who were evidently on their way from church. The old man with the patch over one eye spat very cautiously. He would keep the eye that didn't have a patch over it fixed on the conductor. When the conductor was not looking he would spit. He would do it quickly and then look in another direction. He got off at Eighth and Chestnut streets. When he had alighted the conductor was asked:—

"Did you see that old man spitting on the floor?"

"Of course I saw him," answered the conductor. "I reckon you think I ought to have stopped him. Well, life's too short. He won't be stopped."

"What do you mean by that?"

"What I mean is that he won't be stopped. He is one of our regular riders. I have spoken to him a dozen times about spitting on the floor. He says, "All right," and then goes right on. He's an old gentleman, and I don't want to throw him off."

A man in a shiny silk hat, a creaseless light overcoat, and kid gloves, was the most conspicuous offender on car No. 2 of the Market Street and Columbia Avenue line. He was chewing tobacco. Most of the tobacco chewers stood on the rear platform or went forward into the gripman's compartment. This man sat about midway of the car and chewed and spat. On the street the man would have passed for a gentleman. He was not interrupted in his spitting, and, to the relief of the ladies on the car, he got off at Girard avenue, and he wore a complacent smile.

The conductor said he had not noticed the man spit.

Car No. 11, down Franklin street, had another spitter who looked like a gentleman. He had a lady with him. He spat on the floor three times between Master street and Callowhill street, and the lady looked at him reproachfully each time. He saw the reproachful look and knew what it meant, but it had no more effect on him than a blowgun turned against a brick wall.

The spitting was particularly flagrant on the cars on Chestnut and Walnut streets and on the Market street cable cars. On Market street one man who was decorating the floor with tobacco juice was touched on the arm by the conductor. He looked up, nodded his head, spat on the floor once more as if for spite, and left the car.

"Are you not able to stop spitting in the car?" one of the oldest Chestnut street conductors was asked.

"I suppose we could stop it, but it would be worth double pay," he answered. "The putting up of the signs has had some effect. It has checked the worse cases, but there are hundreds of men who spit and spit and won't be interfered with. Why, yesterday when I spoke to a man who was hawking and spitting all the way east from West Philadelphia he told me in the coolest manner that it was a free country, and as long as he paid his fare he had a right to do what he pleased. Now, suppose I tried to put him off. He was bigger than me. There would have been a fight and I ain't fond of fighting. Then the car would have been delayed and I would have been censured at the end of the line. So I concluded to allow the hog to go on spitting and made my trip on time."

Many of the spitters evade the spirit of the notice by spitting between the back of the seats and the side of the car. It is an inspiriting sight to see a well-dressed man turn around, expectorate in the narrow crevice, and resume his former position with an air of self-complacency.

It would seem that just as heartily as we would welcome the issuance of this order, equally as regretfully should we note its non-enforcement. Could we but correct the unnecessary habit of promiscuous expectoration, so much more prevalent in this country than elsewhere, as to have, in reality, become an American characteristic, the benefit to be derived therefrom would be incalculable. Your committee would, in conclusion, report that the public interest in hygiene is infinitely greater than it was before the establishment of our State Board of Health: that this interest is daily growing and that an intelligent and comprehensive "Sanitary Code," enacted by our coming legislature, would be received and gladly welcomed by the people of our state.

All of which is respectfully submitted.

JOSEPH F. EDWARDS, *Chairman*,

4—REPORT OF THE COMMITTEE ON WATER SUPPLY, DRAINAGE, SEWERAGE, TOPOGRAPHY AND MINES.

To the President and Members of State Board of Health of Pennsylvania:

GENTLEMEN: Your Committee on Water Supply, Drainage, Sewerage, Topography and Mines would respectfully report, that the principal matters which have recently been referred to them are the nuisance created by the emptying of the drainage of the Devon Inn into a small stream flowing over the grounds of various private owners, and a similar nuisance created by the State Normal School at Millersville, near Lancaster, Pa.

The drainage nuisance of Devon has received the very careful attention of your committee. The complaint was made by various property owners, Mr. C. Davis English, of Berwyn, representing them. The chairman made a thorough examination, and ascertained that there was no question as to the existence of this nuisance, and that the law was being plainly violated by the hotel in contaminating a water-course of the commonwealth. After considerable correspondence, etc., the hotel undertook to abate this nuisance by introducing what is known as the Rimmer system of purification. They have introduced this system under the direction of General Russel Thayer, C. E., who was employed by them for that purpose. Upon the completion of the plant, the Board, at the invitation of General Thayer, made an inspection of its workings. This was done very recently, and it was claimed that the apparatus was not in working order, that it would require several weeks of operation for it to adjust itself to the conditions. The chairman recommended to the secretary that, after a reasonable time had elapsed, a complete set of analyses be made in order to obtain the exact results of this process, and he recommended that samples be collected by Dr. Atkinson, one of our inspectors, first, of the water-supply of the hotel; second, of the sewage before it enters the purification apparatus; third, of the sewage, after it has passed through the apparatus, at the point where it enters the stream; fourth, of the waters of the stream above the point where the sewage enters it, with a fifth analysis of the waters of the stream on the property of Mr. English, if the latter is considered desirable. In this way the exact results of the process can be obtained. It is important to know the constituents of the water-supply of the hotel and of the stream before the sewage enters it, in order that their bearing may be determined upon the general result.

As soon as the above have been completed the committee will have further report to make to the Board.

Your committee regard this case as an important one, owing to the magnitude of the interest involved, but there seems to be no doubt as to the plain duty of the board to insist upon the enforcement of the law in this case, unless the appliances now being tried are entirely successful, or at least unless results obtained are entirely satisfactory to interested parties.

The Board themselves inspected the stream into which the sewage of the State Normal School at Millersville is emptied, and, except for the benefit of those members who were not present at that inspection, it would be superfluous for the committee to enlarge upon the conditions which prevail. It is about the filthiest stream that the committee ever saw. Immense masses and crusts of disgusting organic matter exist everywhere along that part of the stream which we inspected. It is very important in the opinion of the committee, that proper action on should be taken in this case, as this nuisance is being created by an institution of the state, and the committee respectfully recommend that special action upon this latter subject be taken at the meeting at which this report is presented.

Respectfully submitted,

HOWARD MURPHY, *Chairman.*

5—REPORT OF THE COMMITTEE ON PUBLIC INSTITUTIONS AND SCHOOL HYGIENE.

Your committee is impressed with the necessity of calling renewed attention to the subject of school hygiene with special reference to the supply of pure air in sufficient quantity, and increased vigilance upon the part of school authorities and the people generally in the matter of preventing the spread of contagious diseases among school children.

J. H. McCLELLAND, M. D.,
Chairman.

6—REPORT OF THE COMMITTEE ON SANITARY LEGISLATION, RULES AND REGULATIONS.

Your Committee on Sanitary Legislation, Rules and Regulations beg leave to report that, owing to biennial sessions of the legislature of the state, the last year has not afforded material for any report as to legislation. It will be proper at this time, however, on the eve of the assembling of the session of 1891, to suggest needed additional legislation, with a view to the enactment of organic laws upon which the Board will better be enabled to carry out the great work of sanitary education throughout the commonwealth. While it is gratifying to be cognizant of the fact that local boards of health have been established in most of the population centers, and in many of the smaller towns, there are, however, no general organized county and township boards throughout the state. So long as the sanitary regulations of the state are not under as effective organization as is the common school system, just so long will the inhabitants of our commonweath be deprived of the full and invaluable benefits vouchsafed to them by the prevention of disease. Your committee, therefore, suggest the importance of asking that a bill be passed establishing county boards of health which should provide for a county health officer with power to organize township boards. Another much needed law is one of a general character preventing the polluting of the streams throughout the state with the carcasses of dead animals and other offensive animal offal.

Under the head of rules and regulations, it would be well to carefully consider the propriety of establishing a rule compelling all state and public institutions to purify their sewage before discharging it into small streams which are, or may be, used by man or beast as a water supply. The inspection report on the condition and disposition of the sewage of the State Normal School at Millersville, and the polluted condition of the water and adjacent banks, is of itself, sufficient cause for a careful inspection of all public institutions with reference to the pollution of small water-courses, and for the immediate adoption of steps to remedy a fruitful source of disease and discomfort to a large class of the inhabitants of the state.

State and public institutions should first set the example so much needed, when private enterprise would follow without difficulty, and an important step would have been taken in sanitary reform.

Respectfully submitted.
S. T. DAVIS, M. D.,
Chairman.

APPENDIX B.

REPORTS OF INSPECTIONS.

1. Inspection at Natrona, Allegheny county, by J. R. Thompson, M. D., Medical Inspector.
2. Inspection at Mansfield, Tioga county, by E. D. Payne, M. D., Medical Inspector.
3. Inspection at Berwick, Columbia county, by Wm. Leiser, Jr., M. D., Medical Inspector.
4. Inspections at Oxford and Lincoln, Chester county, by Wm. B. Atkinson, M. D., Medical Inspector.
5. Inspection at Greensburg, Westmoreland county, by W. E. Mathews, M. D., Medical Inspector.
6. Inspection at Rockwood, Somerset county, by C. L. Gummert, M. D., Medical Inspector.
7. Inspection at Bridgeport, Montgomery county, by Howard E. Murphy, C. E., member of the Board.
8. Inspection at Patterson, Juniata county, by A. B. Brumbaugh, M. D., Medical Inspector.
9. Inspection at Blairsville, Indiana county, by W. E. Matthews, M. D., Medical Inspector.
10. Inspection at Langhorne, Bucks county, by Wm. B. Atkinson, M. D., Medical Inspector.
11. Inspections at Bensalem, Bucks county and at Mechanicsville, by Wm. B. Atkinson, M. D., Medical Inspector.
12. Action regarding an outbreak of Diphtheria at or near Monroeton, Bradford county, by E. D. Payne, M. D., Medical Inspector.
13. Inspection of the Devon Inn Drainage Scheme, Berwyn, Chester county, by Dr. G. G. Groff, President *pro. tem.*, Dr. Pemberton Dudley, Dr. S. T. Davis, Howard Murphy, C. E., and Dr. Benjamin Lee, Secretary.
14. Inspection of the Drainage of the State Normal School at Millersville, Lancaster county, by the Board.
15. Inspection at State College, Centre county, by C. B. Dudley, M. D., Medical Inspector.
16. Inspection at Edgehill, Montgomery county, by Wm. B. Atkinson, M. D., Medical Inspector.
17. Inspection at Sharon Hill, Delaware county, by Wm. B. Atkinson, M. D., Medical Inspector.
18. Report on contamination of the Loyalhanna river, at Saltsburg, Indiana county, by J. R. Thompson, M. D., Medical Inspector.
19. Report on the Beaver Falls river water, by J. R. Thompson, M. D., Medical Inspector.
20. Inspection at Wallingford, Delaware county, by Wm. B. Atkinson, M. D., Medical Inspector.
21. Inspection at Pottstown, Montgomery county, by Wm. B. Atkinson, M. D., Medical Inspector.
22. Inspection of the Anderson Water Purifier Scheme, at Lardner's Point Pumping Station, Delaware river, September 27, 1890. Benjamin Lee, M. D., Secretary.

23. **Inspection at Bethlehem, Northampton county, by Chas. McIntire, M. D., Medical Inspector.**
24. **Inspection at Newville, Cumberland county, by R. L. Sibbet, M. D., Medical Inspector.**
25. **Inspection of Devon Inn Drainage, at Berwyn, Delaware county, by Wm. B. Atkinson, M. D., Medical Inspector.**
26. **Inspection of Horatio, Jefferson county, by Spencer M. Free, M. D., Medical Inspector.**
27. **Inspection at Sunbury, Northumberland county, by Wm. Leiser, M. D., Medical Inspector.**
28. **Inspection at Chambersburg, Franklin county, by R. L. Sibbet, M. D., Medical Inspector.**
29. **Inspection at State Line, Franklin county, by C. L. Gummert, M. D., Medical Inspector.**
30. **Inspection at Norwood, Delaware county, by Wm. B. Atkinson, M. D., Medical Inspector.**
31. **Inspection at Dauphin, Dauphin county, by Paul A. Hartman, M. D., Medical Inspector.**
32. **Inspection at Bethlehem, Northampton county, by Chas. McIntire, M. D., Medical Inspector.**
33. **Inspection at Farrandsville, Clinton county, by Spencer M. Free, M. D., Medical Inspector.**
34. **Inspection of Punxsutawney, Jefferson county, by S. M. Free, M. D., Medical Inspector.**
35. **Inspection relative to Leprosy in Chester, Delaware county, by Wm. B. Atkinson, M. D., Medical Inspector.**
36. **Inspection of Lenni and vicinity, Delaware county, by Wm. B. Atkinson, M. D., Medical Inspector.**

1 - INSPECTION AT NATRONA, ALLEGHENY COUNTY

By J. R. THOMPSON, M. D., *Medical Inspector.*

PITTSBURGH, *November* 27 1889.

A small run passes through a culvert under the railroad to the Allegheny river. On either side of the run we have the rear ends of the houses which front on the two streets running parallel with it towards the river. These houses probably number one hundred in all with privy annex buildings amounting to about fifty, which empty into the run. At places, the run is logged up on either side to make it deeper, and a better receptacle for hiding the filth thrown into it. At other places the run is full of growing weeds which retard the sluggish progress of the filth on its way to the river. The occupants of one of the houses have gone so far as to erect an open hopper and spout attachment to their privy, and the fæcal matter can be seen running along the spout and dropping into the run. The remedy for this state of affairs is to remove the culvert at the railroad and place it about three hundred feet down the said road in the direction of Pittsburgh, from thence the water will be conducted by a natural channel to the river, thus avoiding the town entirely. This change, including new culvert under the railroad, will cost less than one hundred dollars. As long as this run passes through the town so long will these people continue to deposit filth of all kinds in it.

The justice of the peace is William H. Drury; the supervisor of Harrison township is James Mitchell Sr.; the town is not a borough. Besides the privies, two slaughter houses empty into the run.

2.—INSPECTION AT MANSFIELD, TIOGA COUNTY.

By E. D. PAYNE, M. D., *Medical Inspector.*

TOWANDA, PA., *March* 12, 1890.

I have made an inspection of the premises mentioned in that order, and have to report that, in my opinion, the conditions do not call for any action on the part of the State Board of Health.

The facts are these: In the village of Mansfield, Tioga county, there is a lot situated on Sullivan street, in a well-settled part of the town, owned by a Mrs. ———. This lot has a depression in it of an area of fifty by one hundred feet and could be brought to the general level of the rest of the lot by a filling of one foot and a half on the average. I can see no conditions about it to justify the designation of a swamp.

Adjacent to this lot lives a Mr. ———, father of the young man who made the complaint. Mrs. ———, has some chronic illness which the family attribute to the fact of her living near this place. But two different physicians who have attended her inform me that her illness and this low ground complained of, do not bear to each other the relation of cause and effect; neither is there, nor has there been, any other cause of illness which is thought to be due to this place as a cause.

In my opinion it is simply a question of drainage, to be determined by the borough authorities, as to whether it shall be filled up to the general level or to wait the completion of a proposed system of sewerage and then drain into that. One or the other of these methods will need to be adopted, for the ground is too low to drain into the streets.

3—INSPECTION AT BERWICK, COLUMBIA COUNTY.

By WM. LEISER, Jr., M. D., *Medical Inspector.*

LEWISBURG, UNION CO., PA., *December* 18, 1889.

I visited Berwick, Columbia county, Pennsylvania, on Friday, November 30, 1889, and inspected its contemplated new water supply.

Berwick is now supplied with water from a spring situated at the base of the hill on which the town is built, right along the river bank, and but little above low-water mark. This spring is subject to overflow in all moderate freshets, at which time its water and that of the river freely mix and are in a manner one.

The town is built on a hill of stones and gravel, and it is probable that the spring above-mentioned drains the sewage of the town. Surface water and water thrown into cesspools immediately sink away out of sight. The town, however, has always been healthy, and the water is pronounced "good" on chemical examination. The present supply is said to be insufficient for the demands of the place. The principal manufacturing establishment, the Jackson & Woodin Manufacturing Company, requires about six hundred thousand gallons per day, but do not use the water from the above spring on account of its being hard. This company is very anxious to have soft water for its manufacturing purposes, and hence seeks another source of supply. The distance from the town to where it is proposed to make the dam or reservoir for the new supply is about three miles. The stream that is to furnish the water is large and capable of furnishing about one and a half millions gallons of water per day, when down to low-water mark, a quantity sufficient for the use of the town. This stream has its origin in mountain springs, and drains the surface water from barren waste lands and about twenty-five farms under cultivation and with dwellings and barns and out-houses, etc., thereon. At present the refuse from houses and barn-yards drains directly into this stream. The advantages of the proposed new water supply are, first, that the supply is abundant, thus diluting impurities; and, second, the habitations within the area drained by it are comparatively few. The disadvantage is that there are any habitations at all drained by it. If the entire basin were bought by the company and all habitations removed therefrom, and the land allowed to remain as waste land, the stream would furnish typical water. But if this should be impracticable, owing to the value of the land, yet, if the company should keep a vigilant supervision over the stream and the area drained by it, preventing all direct contamination of the water from the barns and dwellings now thereon, or that may hereafter be erected thereon, and should have those barns and privies that are now adjacent to the stream removed therefrom a proper distance and prevent any others from being located near the stream, in such case I should be inclined to consider the water reasonably good for domestic use.

4—INSPECTION AT OXFORD AND LINCOLN, CHESTER COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

I went to Oxford on March 24, and carefully examined into the condition of affairs in connection with the cases of diphtheria that had occurred in that place. By the most thorough investigation I was not able to trace a direct connection between them, but I am satisfied that the vital importance of the most complete isolation is not always understood. In every case of infectious disease, it is the first duty of the medical attendant, after the diagnosis is no longer doubtful, to see that the case is placed under thorough quarantine; that every person should be forbidden to hold any communication in any way with the affected person and nurse, unless under special necessity, and then with every precaution to prevent the spread of the disease. It would be well to remove, at least from the floor occupied by the patient, if not from the house, every inmate that could be sent away.

While taking care not to alarm the inhabitants of the vicinity, care should be taken that they are informed of the infectious nature of the attack and are duly cautioned against unnecessary exposure to it.

The disease having ceased to exist, no further action will be needed in this locality. I was informed that in each instance, disinfection was practiced under the advice and direction of the medical attendants, and that all infected clothing had been properly disposed of.

On the same day I went to Lincoln, and found but one person ill, and that with a mild form of the disease. At the same time I examined the premises of the university and made sundry suggestions which I deemed useful relative to the hygienic surroundings.

I have not thought well to burden my report with a record of the cases. I took the opportunity to see each person that I could learn had, in any way, been brought in contact with these cases, and impressed on each the great danger of involuntarily aiding in the spread of disease and the importance of avoiding future cases.

I am glad to announce that at latest accounts both of these places were free from the disease.

5—INSPECTION AT GREENSBURG, WESTMORELAND COUNTY.

By W. E. MATTHEWS, M. D., *Medical Inspector,*

I made inspection at Greensburg yesterday. The charter of the place was granted in 1799, and no changes have been since made. Under this charter the borough authorities cannot enforce any law that conflicts with private property—*e. g.*—Here is a man that has a privy vault and it is overflowing; unless this flows out in a public alley they can do nothing. Again, the authorities have had placed an eight inch sewer-pipe in all the streets and alleys and now they ask the people to connect their privy vaults with this sewer-pipe; yet many of the people will not do so and the authorities seem to think they cannot enforce this, or at least they cannot, unless entering into a litigation with each individual case and this, of course, they do not wish to do. The authorities think that a notice from the state authorities, or a proclamation to the burgess from you, that could be published in the daily papers, would be all that would be necessary, or for you to declare these privies nuisances, then the authorities think they can do something.

There is no question about many of the privies being nuisances, for in many cases, located as they are on hilly ground on the back part of a lot, a rain fills up and overflows the vault, and the contents are in many cases carried right into their neighbor's well or cellar. The water supply is good, except in a few cases where people use well water.

I tried to explain to them your position in the matter: told them you would write them and do all in your power.

The borough authority is vested largely in five men: John C. Keffer, chief burgess; Oliver R. Snyder, burgess; William Orr, assistant burgess; Samuel Allwine, assistant burgess; John M. Keener, assistant burgess. Also two borough solicitors. With these men I had a personal interview, and they accompanied me while making a survey of the town.

6—INSPECTION AT ROCKWOOD, SOMERSET COUNTY.

By C. L. GUMMERT, M. D., *Medical Inspector.*

I visited at Rockwood on Monday, April 28, and spent the evening, through the kindness of Dr. Gildner, in becoming acquainted with the physicians of the place and talking over the epidemic. I found but four cases of the unknown disease, and decided as follows: One case undoubted typhoid fever; one case so far recovered as to be at work; one case just taken sick, symptoms not sufficiently developed to diagnose, but think it will be typhoid, as it is in the same house with the undoubted case; one case of malaise.

There have been three deaths in the past month: one case of cerebral abscess, that also presented some typhoid symptoms in the later stage (but, in my opinion, that would be expected); one case from pneumonia, patient, an old man; one case from a complication of diseases, but no symptoms of typhoid.

These deaths and cases are all in contiguous houses, and the three families use the water from one well. The drainage from the stables, privies, hen coops, etc., is all toward the houses and the wells. The soil is alluvial for the depth of ten to twelve feet; then an impervious blue clay is met through which very little water passes. The town is situated at the junction of Coxes creek and Casselman rivers and is subject to overflow. Last fall the overflow moved privies, manure piles and a slaughter house with its refuse, and the wells in that district were filled; the above named blue clay acting as as luiceway or conductor for the dissemination of the unfiltrated germs and of the offal which, no doubt, contained typhoid germs, as Coxes creek carried the germs from other points where the discharges from typhoid cases then existing were emptied into said creek: and this theory is further strengthened by the fact that typhoid fever is now present at Casselman, a station on the Baltimore and Ohio railroad, two miles from Rockwood, and at other points along Coxes creek.

In my opinion the disease is not of sufficient gravity to make it a nuisance, and the physicians are amply able to deal with it, especially as some of their most prominent citizens have promised to organize a health board at once.

For the prevention of an epidemic in the future, I would recommend the removal of the slaughter house from the center of town to beyond the borough limits, and the substitution of the dry earth closet in place of the present privies, as well as a better system of drainage and water supply.

7—INSPECTION AT BRIDGEPORT, MONTGOMERY COUNTY.

By HOWARD MURPHY, C. E., *Member of the Board.*

On May 9, I visited Bridgeport, Pa., in company with Mr. C. Jesse Young, who had called my attention to the existence of a number of ponds which he informs me were regarded as a nuisance by the residents of that town. From observation, and the information received from Mr. Young, I find that there are some five or six different pools of water which have been created by the excavation of clay for brickmaking. These ponds are just about in the heart of the town, and there is no doubt in my mind that they form a nuisance which is prejudicial to health and should be abated This can be accomplished either by filling in these excavations with good material or by laying and maintaining proper drain pipe.

I am of opinion that the Board should act in this matter in the usual way.

Mr. Young informs me that the owner of the property on which this nuisance exists is Mr. J. A.

The burgess of the borough is Mr. Samuel Coats, who, Mr. Young informs me, is much interested in this subject, and I have no doubt that he will assist in any efforts that are made to abate the nuisance.

8—INSPECTION AT PATTERSON, JUNIATA COUNTY.

By A. B. BRUMBAUGH, M. D., *Medical Inspector.*

HUNTINGDON, PA., *July* 24, 1890.

On the 22d I inspected the cause of complaint at Patterson, Juniata county,—contents of a privy flowing into cellar of house owned by R. E. P. formerly owned by C. M. P. I find the premises located as indicated on the marginal diagram. The "Privy" is one used by and for use of the hotel owned and conducted by M. heirs.

It is a deep hole dug at back end of lot next to alley, and about three feet from the back cellar wall of the house owned by Mr R E. P. and occupied by Mrs. A. L. as a residence and variety store or shop. The cellar is somewhat deeper than the vault and the liquid contents of the vault flow through the wall into the cellar, and spread on its entire surface. The stench arising is almost unbearable An attempt has been made to empty the vault within a week, but there still remains considerable depth of liquid. The whole affair is a public nuisance.

To properly abate this nuisance it will be necessary to remove the privy, excavate the intervening earth, fill the place with clean earth and lime, properly drain the cellar of the adjoining house and renovate the premises.

9—INSPECTION AT BLAIRSVILLE, INDIANA COUNTY.

By W. E. MATTHEWS, M. D., *Medical Inspector.*

The burgess, Mr. J. Morehouse and part of the council met me at the depot and escorted me to the hotel where we decided on a complete survey of the borough. After this the physicians of the place drove me around the town.

Blairsville has suffered greatly in the past year and especially from an epidemic of typhoid fever.

In the past year the people have been using largely of well water as on account of the disaster at Johnstown, they have been afraid to use the water of the Conemaugh. In some cases these wells had been abandoned for years, and their use resumed only during the past fifteen months, were not even cleaned before the water was used. An analysis of the water from one of the wells, made by Pennsylvania Railroad Company, showed them to be in a horribly filthy condition and the water unfit for use.

The analysis made of the water from the Conemaugh showed it to be comparatively pure.

If the water from the Conemaugh is pronounced bad, the council will insist on new water works and bring the water some distance from a mountain stream.

At present there are twenty-five cases of typhoid fever in B.

No public sewers exists in B., all surface drainage and many of these private drains or sewers, opening in an alley or street, discharge the most filthy material.

There is what might be termed an open sewer or run through the town and all manner of filth is being emptied into this run. The solution for this is to cover this run and make a closed sewer of it, but the council do not seem to know how to get at this, as the run passes through private property in most cases.

In the lower section of the town a man by the name of L. is maintaining a nuisance in the way of a slaughter house, I would suggest that he be compelled to burn all the offal or to remove the building further down the river. Several other slaughter houses are in the borough limits, but are kept in a better condition.

The streets are as a rule clean. The burgess and council are wide-awake active men, and mean to do what is right if only helped a little.

The people of B. use natural gas, as a result much material that was heretofore burned is left to be disposed of in some other way. Some method should be employed for burning all this refuse.

Analysis No. 7115.—Examination of sample of water from Blairsville, Pa. Marked, "No. 2" Ferguson Spring Water. By John Moorhouse, Esq., July 29, 1890. Received July 31, 1890. For household use and drinking purposes only. Examination made July 31—August 7, 1890. By C. M. Cresson, M. D. Amount of sample, ⅝ U. S. G. Reaction, neutral. Condition, clear. Contains—

	Grains in one U. S. gallon.
Chlorine,	3.634
	Parts in 1,000,000 Parts.
Free ammonia,	0.027
Albuminoid ammonia,	0.083
Nitrogen as nitrates,	10.284

Analysis No. 7115.—This water is strongly contaminated with cesspool material. Unfit for any household purpose. The microscope shows this water to contain ciliata and micrococci. Bacteria were not found.

CHARLES M. CRESSON, M. D.

Analysis No. 7114.—Examination of sample of water from Blairsville, Pa. Marked "No. 1." From Ringle Well. By John Moorhouse, Esq., July 29, 9 P. M. Received, July 31, 1890. For household use and drinking purposes only. Examination made July 31—August 7, 1890. By C. M. Cresson, M. D Amount of sample, ⅜ U. S. G. Reaction, neutral. Condition, clear. Contains—

	Grains in one U. S. gallon.
Chlorine,	3.0178
	Parts in 1,000,000 Parts.
Free ammonia,	0.329
Albuminoid ammonia,	0.274
Nitrogen as nitrates,	0.171

Analysis No 7114.—This water is strongly contaminated with cesspool material. Unfit for any household purpose. The microscope shows this water to contain ciliata and micrococci. Bacteria were not found.

CHARLES M. CRESSON, M. D

Analysis No. 7116.—Examination of sample of water from Blairsville, Pa. Marked "No. 3." Mrs. Doran's Well. July 29, 9 P. M. Received July 31, 1890. For household use and drinking purposes only. Examination made July 31—August 7, 1890. By C. M. Cresson, M. D. Amount of sample ———. Reaction, neutral. Condition, clear. Contains—

	Grains in one U S gallon.
Chlorine,	3.697
	Parts in 1,000,000 Parts.
Free ammonia,	0.220
Albuminoid ammonia,	0.165
Nitrogen as nitrates,	5.142

Analysis No. 7116.—This water is strongly contaminated with cesspool material. Unfit for any household purpose. The microscope shows this water to contain ciliata and micrococci. Bacteria were not found.

CHARLES M. CRESSON, M. D.

Analysis No. 7117.—Examination of sample of water from Blairsville, Pa. Marked "No. 4." Jonas Baughman's Hydrant. July 29, 9 P. M. Received July 31, 1890. For household use and drinking purposes only. Examination made July 31—August 7, 1890. By C. M. Cresson, M. D. Amount of sample, ⅜ U. S. G. Reaction, alkaline. Condition, clear. Contains—

	Grains in one U. S. gallon.
Chlorine,	0.207
	Parts in 1,000,000 Parts.
Free ammonia,	None.
Albuminoid ammonia,	0.055
Nitrogen as nitrates,	4.285

Analysis No 7117.—This water contains zooglia and ciliata, and the indications are that it is contaminated with animal refuse. There is, however, no evidence of the presence of such an amount or character of soluble animal matter as will positively condemn it for household use.

It must, however, be classed among dangerous waters, because the addition of a very small amount of hurtful material would render it unwholesome.

CHARLES M. CRESSON, M. D.

Analysis No. 7118.—Examination of sample of water from Blairsville, Pa. Boyer's Well, corner Campbell and Spring streets. Collected by W. R. Boyer, July 31, 1890, 3 P. M. Received August 1, 1890. For household use and drinking purposes only. Examination made August 1—8, 1890. By C. M. Cresson, M. D. Amount of sample, one U. S. G. Reaction, neutral. Condition, clear. Contains—

	Grains in one U. S. gallon.
Chlorine,	1.158
	Parts in 1,000,000 Parts.
Free ammonia,	0.083
Albuminoid ammonia,	0.083
Nitrogen as nitrates,	5.142

Analysis No. 7118.—This water badly contaminated with cesspool material. Unfit for use. It carries ciliata and micrococci in great numbers, but no bacteria have been found in it.

CHARLES M. CRESSON, M. D.

Analysis No. 7125.—Examination of sample of water from Blairsville, Pa. Well of T. D. Cunningham, Esq. Marked "No. 6." From John Moorhouse, Esq., burgess. Received August 2, 1890. For household use and drinking purposes only. Examination made August 2–9, 1890. By C. M. Cresson, M. D. Amount of sample,———. Reaction, alkaline. Condition, clear, with floating particles. Contains—

	Grains in one U. S. gallon.
Chlorine,	4.258
	Parts in 1,000,000 Parts.
Free ammonia,	0.274
Albuminoid ammonia,	0.137
Nitrogen as nitrates,	16.454

Analysis No. 7125.—This water is badly contaminated with cesspool material and is unfit for use. It contains large numbers of ciliata and of the bacteria, which are the germs of intestinal disease. There is no decided indication (excepting in sample No. 7125) as to the precise source from which the animal matter is derived. It may be from household kitchen drainage or manure piles.

Sample No. 7125 is evidently foul with cesspool material. It is probable that in the case of some of these wells, careful examination of the surroundings will reveal the source and mode of entrance of foreign material, and a remedy can be applied by which purer water can be obtained from the same well.

CHARLES M. CRESSON, M. D.

10—INSPECTION AT LANGHORNE, BUCKS COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

July 19, 1890.

On the 18th inst. I visited Langhorne, and, with the aid of Drs. Thomas and Henry Lovett, inspected the premises of the only three cases of diphtheria that had occurred in that place. All were colored persons; one proved fatal. The last case occurred six weeks ago. At present no special illness prevails there. All the cases were widely separated, and in but one was there any evidence to give a belief in any contagion. This was the attendance at the same school and association of two cases. The attending physician had not seen any thing to cause him to regard this. In the fatal case, it was found that turnips had been allowed to remain and partially decay in the cellar. These were at once removed, and in each instance isolation and the most thorough disinfection and final fumigation with sulphur had been practiced.

In the case at the house of the Holland family, there is no doubt that the condition of the cellar aided in the production of the disease. The steps of the cellar are rotted and broken so that it cannot be used, and, of course, cannot be cleansed and a foul odor of decay arises on opening the door leading to it. I would recommend, in this case, that the owner of the premises, Mr. A. D. B., of Langhorne, be required to repair the steps and thoroughly cleanse the cellar.

11—INSPECTION AT BEN SALEM AND AT MECHANICSVILLE, BUCKS COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

I went, July 22, to Eddington, and from thence to Mechanicsville and other parts of Ben Salem township. No cases of diphtheria have occurred in any portion except Mechanicsville since last winter. Two cases had been noticed in M. of which one died. Both were in very filthy houses and no other cause appeared in either, unless by contact with the fatal case noted at Langhorne in my former report In each case the proper means were employed by Drs. Stroup and Miller who saw the cases. A very careful inspection failed to detect any other form of sickness except mild cases of the ordinary bowel troubles incident to hot weather.

12—ACTION REGARDING AN OUTBREAK OF DIPHTHERIA AT OR NEAR, MONROETON, BRADFORD COUNTY.

By E. D. PAYNE, M. D., *Medical Inspector.*

Yesterday evening I had occasion to make a short visit to Monroeton, a small town four miles south of here. While there I learned that two fatal cases of malignant diphtheria had occurred upon the spur of the mountain two miles to the south of Monroeton, one yesterday and one the day previous, and both in the same family. I should think there was some feeling in the village over the circumstances. On hearing this I sought Dr. O. H. Rockwood, who had attended them, and learned that the statement was not only true, but that another child was also sick. He stated at first that there appeared to be no assignable cause for the infection, but remembered that an older brother had come home from working in the woods with a slight sore throat that was not thought much of. I immediately said that he must have had a mild attack of diphtheria, and that it was another evidence that in this disease, as in scarlet fever, a fatal infection might follow an exposure to a mild form.

I further learned from him that the funeral of the two children was to take place to-day, and that he was to make a visit to the sick child this morning. Therefore, I asked him to call the attention of the family to the fact of my knowledge of the circumstances, and request they should not have a public funeral, but do everything in their power to prevent the spread of the contagion. As the doctor is a man of intelligence and discretion, and the time for action short, I left the explanation of the matter to him: but I asked him to put my *request* in such form as to make it appear as strong as possible. I think he will do so.

This is as far as I felt justified in acting without your authority, and I hope it will meet with your approval.

13.-REPORT OF INSPECTION OF THE DEVON INN DRAINAGE SCHEME, BERWYN, PA., MADE JUNE, 27; 1890.

Present—DR. GEO. G. GROFF, President, *pro tem.*, Dr. PEMBERTON DUDLEY, Dr. S. T. DAVIS, HOWARD MURPHY, C. E., and Dr. BENJAMIN LEE.

Accompanied by, and at the request of General Russell Thayer, C. E., the above-named members, with several other gentlemen, made an inspection of the disposition of the sewage of the Devon Inn, on the date named.

The scheme, which is known as the Rimmer system, may be simply described as follows:

A large amount of the solid matter is first intercepted at or near the hotel. The sewage from the hotel is then conveyed through an eight-inch glazed pipe to the purifying shed, situated about half a mile from the hotel. Here the sewage is first received in a tank and mixed with precipitating liquids, which are also a disinfectant, and the remaining solids, as far as possible, separated. The liquid is then passed into what is named a skimmer or tank, about eight feet deep, and at this stage the sewage appears to be much purified. From thence it is passed into a large circular tank, being so conveyed by small tributary pipes as to fall over the entire inner surface of such tank by a dripping or percolating system, and finally passed through the following mentioned purifying layers in such tank: First a layer of eighteen inches of fine sand, then through nine inches of a mineral substance prepared by the company, then through a layer of three inches of fine screenings, then a six-inch layer of three-quarter inch gravel, and then through another layer of six inches of stone or gravel, of one and a half inch in size.

The whole process was fully explained by the engineer, who stated that the cost of the mineral was about one hundred dollars per ton, and that fifteen tons of this stuff will proably last fully ten years, as it can be used many times over.

The Board then inspected the drain into which the purified sewage ran, and while of the opinion that the system will to some extent prevent contamination of this stream, they were not convinced that the process is a perfect one; some allowance must, however, be made for the crude condition of the scheme, which can hardly be said to be completed.

14—REPORT OF INSPECTION OF THE DRAINAGE OF THE STATE NORMAL SCHOOL AT MILLERSVILLE, LANCASTER COUNTY, PA., MADE JUNE 28, 1890.

Present—Dr. GEO. G. GROFF, President *pro tem.*, Dr. DUDLEY, Dr. DAVIS, HOWARD MURPHY, C. E., and Dr. LEE.

Acting on complaint of certain residents of Millersville, Lancaster county, Pennsylvania, the above-mentioned members of the Board made an inspection of the drainage of the State Normal School at that place, on the date named above.

The Board members were met and introduced to Mr. E. O. Lyte, superintendent of the institution, and by him conducted over all that portion of the school which had any connection with its drainage system.

At the outset Mr. Lyte explained that while he welcomed a full inspection by the State Board, he thought some jealousy had been created in the neighborhood, owing to the failure of the complainant to obtain the milk contract this year, since which he had shown himself very antagonistic to the institution. He reported that there had recently been a mild form of phargngitis epidemic in the school, which at first was thought to be diphtheria. Eight or ten of the inmates were attacked at a time, the course of the disease generally running about four days. This happened within the past month, none of the cases were serious, and none were fatal. The plumbing, etc., of the building had recently been overhauled in the usual manner, and nothing was found defective. The Board then inspected the water closets and urinals of the school, and found them to be fairly sanitary with good flushing arrangements, etc. There was an abundant supply of pure water supplied from two springs, the stream of one of which was nearly five inches in diameter. The whole of the excreta from the inmates, which numbered from four hundred and fifty to five hundred pass from the water closets into an eighteen-inch circular brick drain, which passed under the main supply pipe about seventy-five yards from the building. Just previous to passing under the pike, the sewage received the water from one of the springs before mentioned, the same drain (18 inches) being also the conveying agent for all storm water. Passing under the pike the sewage, spring water, etc., then formed a stream running between cultivated fields. Here, all along this stream was found a serious nuisance. Human excreta, paper, etc., black with exposure, and giving off a bad stench was found stagnant on this stream for a considerable distance, and the Board at once condemned it as an unqualified nuisance. It was generally felt that the most available remedy for the abatement of this nuisance was the laying of a separate glazed pipe, of not less than nine inches in diameter, through, across, or under this land, constructed with suitable flushing tanks, the joints being properly cemented or clay puddled, and laid for such a distance as to prevent any nuisance. Mr. Lyte explained that this stream had sometimes been dammed by the occupier of the land for the purpose of flooding the contiguous fields with the sewage.

15—INSPECTION AT STATE COLLEGE, CENTRE COUNTY.

By C. B. DUDLEY, M. D., *Medical Inspector.*

ALTOONA, PA., *July* 30, 1890.

I spent yesterday at State College, examining into the question of the epidemic at that place. As you are aware the president of the Board, Dr. Groff, was at State College a few weeks ago, and had his attention called to the matter. He examined the affair somewhat, and wrote to the committee of the faculty of the institution, as well as Dr. J Y. Dale, of Lemont, in regard to the matter.

Briefly the history of the affair seems to be as follows: Sometime in the spring a case of sickness in one of the boarding houses frequented by the students, resulted in death. There seems to be a difference of opinion between Dr. Glenn, the local physician at State College, and Dr. Dale who lives at Lemont, three miles away, as to what the disease was. Dr. Dale, thought it was unquestionably diphtheria, and Dr. Glenn is reported to have said that it was not diphtheria. This case was followed by a public funeral, and during the two or three months following, it is believed that there were five or six, possibly more, cases which could be fairly traced to this primary case.

One of the members of the committee of the faculty, who was not present yesterday, made a sketch and history of the matter in detail. I did not deem it essential to try to obtain this sketch, as it would be of more value from a scientific than from a practical standpoint as the matter now stands. About commencement time this year, rumors were spread abroad, that there was a good deal of sickness at State College and fears were expressed by those interested in the institution that it might interfere with the success of the commencement season. This rumor led Mr. Shoemaker, the superintendent of the railroad running to State College, to consult with Dr. Glenn over the matter, since he, Mr. Shoemaker, wanted to take a number of people to State College for the commencement exercises, but did not feel free to do so if there was an epidemic. The reply received from Dr. Glenn was substantially the information sent you in my former report on this case. Up to commencement time three deaths had occurred. The end of last week some new cases appeared in a farm house about a mile west of State College, two families living in one house. There were I believe six cases altogether, of which three died. In State College itself there are now two convalescing cases, and the cases in the farm house are now said to be all convalescing. I talked with Dr. Glenn quite at length yesterday, and he stated that since the first of January last he has had one hundred and seventy-eight cases of sore throat. Of these by far the larger portion, if I understood him correctly, were not characterized by the membranous coating of the throat or fauces, and of these one hundred and seventy-eight cases, five have proved fatal, and a sixth one died after two weeks of convalescence. Dr. Dale has had since the first of January last, I think, not above six or eight cases, most of which he thinks were genuine diphtheria. Dr. Dale is doing everything he can in all the cases which he has to insure isolation and proper preventive measures. Dr. Glenn also stated yesterday, he was doing all he could do to prevent the spread of disease, by isolating patients as much as possible, and by proper fumigation and disinfection of the rooms and clothing where the sick had been. It is fair to say that Dr. Glenn thinks the fatality attending the last outbreak in the farm house families, was largely due to adverse conditions. The house was small, five were sick at one time in one room, and the water in use was obtained from a well between the house and the barn, and had evidence of organic growth in it. Dr. Glenn stated that he had directed the parties to boil all the water in future before using it, or obtain water from a better source a little distance away.

I made an examination of the streets and alleys, and also of the college grounds yesterday, and found a few hog pens which are in hardly as good condition as they should be; also a few privies which could be much improved. I did not find any serious state of affairs in the matter of filth, except as I will mention below. The houses seem well built, the largest portion of them being new, with plenty of open space between, and so far as location and surroundings are concerned, State College, should be almost a model town for health.

There is no sewer system in the town, the sewage, including that of the college buildings, being almost excusively disposed of by cesspools in the soil. There is a public water supply under the control of the college authorities, which water is obtained from a well one hundred and seventy-five feet deep, from which the water is pumped into a pipe system, and then into a small reservoir located back of the college on high ground, which reservoir serves principally as a stand pipe or pressure arrangement, rather than as a mean of storage and aeration. The piping supplying both the college buildings and the houses in the village which use this water, connect direct to the main leading to the reservoir, so that all the water does not go to the reservoir before it goes to be used. The whole region is located on limestone, which limestone is known, by frequent cavings in of the surface known as "sink holes," to be permeated with cavities. The well itself is in limestone and it is claimed that in boring the well, two streams of water in the limestone were struck, the first one at about one hundred feet, and the second and more powerful one at about one hundred and seventy-five feet. The level of the water in the well is about seventy feet from the surface, and no amount of pumping has ever succeeded in exhausting the supply. It is claimed that many of the privies in the town are so located over fissures or loose places in the limestone, that they never fill up. Also it is known that the drainage from the dormitories of the college is into a cesspool, located in the stone quarry, from which the stone were taken to build some at least of the college buildings. This cesspool is enclosed and apparently all the liquid filth which goes into it, soaks away into the cavities or fissures in the limestone. It is evident, therefore, that the limestone in the region around State College, is becoming gradually permeated, and filled with filth, both from the cesspools and from the privies of the people of the town, and also more largely from the large cesspool, receiving the principal drainage of the college.

In view of this state of affairs, I at once began to question the purity of the water supply. I did not succeed in obtaining any definite information as to any recent examinations of the water, and of course am unable to say whether or not the water supply is free from suspicion. I have sent for a sample of the water, and will examine it in my own laboratory as soon as received, and let you know what the analysis shows.

Meanwhile I say that I only found three things which to my mind indicate any real occasion for difficulty at this place. These are as follows: First, apparently the first case of sickness was not as carefully managed as should have been done. Even though the indications might not be clear as to diphtheria, we cannot but think that greater care should have been taken, and especially a public funeral should not have been held.

Second, the reservoir for the water supply, as stated above, is practically a stand pipe, rather than a place for storage and aeration. The reservoir is vaulted and enclosed completely, except a man hole which may be two feet square. We cannot but regard this as unfortunate. Water obtained from a deep well, we think, would be much more certain of being healthful, if it was thoroughly aerated before being used. Work is now being done on this reservoir, and I went into the reservoir myself. I did not discover anything, except a little sediment, which would be natural, and could not discover any odor. I should be much inclined, however, to recommend opening the top of the reservoir, and the carrying of the water to it through a pipe which would expose the water to the air like a fountain.

Third, the question as to whether the water supply is or is not contaminated with the cesspools, is, to my mind, quite a serious one. Dr. Dale informed me that almost every year, he has known of a few cases of typhoid fever at State College, and it seems to me, it must be evident to every one, that the gradual filling of the cavities in the limestone with filth, would sooner or later result in great detriment either at this location or elsewhere. I hope to be able to speak more definitely as to the present condition of the water, as soon as we have examined a sample.

I hardly think the state of affairs at State College is serious enough to warrant a declaration of an epidemic.

16—INSPECTION AT EDGEHILL, MONTGOMERY COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

July 30, 1890.

To-day I went to Edgehill and inspected the premises complained of by Mrs. T. The gutter leading from her house in the public road, and which should carry the drainage of her premises to the pipe which has been placed across the road to carry off the drainage, has been totally blocked or dammed up by the dumping of earth, so that all the drainage remains in the gutter in front of the T. property, from which it is spreading over the road, or sinking into the ground. At the time of my inspection, the drainage made a pool of dirty stagnant water, ill smelling and likely to cause disease. This dam or obstruction is in the gutter and on the pathway of M. D., who is said to have ordered it placed there. His address is Glenside avenue, Edgehill.

As there is no reason why this earth should remain as an obstruction, and certainly was not in the nature of an improvement, I would suggest that D. be required to remove it at once and place the gutter in a condition to assure the free passage of the drainage.

It is urgent that this be done without delay, as already several cases of diarrhœa have occurred in the houses on this road, and are regarded by the attending physician as having arisen from this stagnant pool.

17—INSPECTION AT SHARON HILL, DELAWARE COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

August 1, 1890.

On the 31st of July, I inspected the premises and grounds at Sharon Hill, Delaware county. I found that a small creek was badly polluted and ill smelling, and gave evidence of the presence of fecal matter along its extent from an open sewer of the diameter of four feet to quite a distance as far as I was able to make my way amid the grass and bushes, and was informed that this creek flowed into another creek after passing through the farms of Messrs S. and H., used as dairy farms, and a number of smaller places, in all of which the cows are accustomed to drink from this stream. It flows into a larger creek called Hamisputa creek, and finally into the Delaware river. The Darby creek is fed by it, and this is much used by the dairy farms along its course. Near the entrance of the sewer the people are careful to fasten their cattle so as to prevent them from drinking of the water. Into the sewer empty the cesspools of six dwellings owned by Mr. M., who resides in the village of Sharon Hill. In one of these houses I was informed that one case of mild typhoid fever had occurred recently. It is undoubtedly a fact that these houses are thus capable of infecting a very large extent, by reason of thus polluting the water of the small creek, then of the Hamisputa, then of the Darby creek, and finally of the Delaware river. Along the whole distance are numerous large and small farms, all using the water for their cattle. Not only are these likely to act as disease centers for the families who use the milk from the cattle, but in the case of the large dairies, the probability of conveying disease to a considerable number is evident. Again, in some cases the water may and no doubt is employed for drinking, and there is reason to apprehend that the wells below may be rendered dangerous by the soaking into them of the polluted water of this initial spring. Here we see a condition of things of a highly dangerous nature at any time likely to explode with terrible results to the people of the region below, and even to carry its dire effects to many others at a distance to whom the milk produced in this locality of the infected creeks is served.

For these reasons I feel that action cannot be taken too soon nor too thoroughly. The cesspools should at once be cut off from all connection with the small creek above mentioned, and all other sources of pollution removed.

After a thorough investigation of the neighborhood, I was unable to find any except surface drainage into this creek from any other places, and I was assured by those who are acquainted with the village that no other drainage exists, unless it be from certain overflowing closets of two houses of Mr. K., who appears to have a pipe or tunnel into the extreme upper end of the said creek.

18.—REPORT ON CONTAMINATION OF LOYALHANNA RIVER, AT SALTSBURG, INDIANA COUNTY.

By J. R. THOMPSON, M. D., *Medical Inspector.*

PITTSBURGH, *August* 23, 1890.

The effects of contamination were noticed at Saltsburg, Pa., through the killing off of large numbers of fine fish that would average some fifteen pounds in weight. There were no dead fish noticed in Kiskiminetas above the point where the Loyalhanna empties into it at Saltsburg, and dead and dying fish were noticed in the Loyalhanna floating in the direction of the Kiskiminetas, and it was not a case of contaminated backwater from the Kiskiminetas, for the latter river was low at the time the fish were killed. The source of contamination is supposed to be the Paper Manufacturing establishment of J. P. & Co., Latrobe, Pa. (Pittsburgh office, 134 First ave.). The nature of the pollution is not known, but is believed to be a chemical one. Dr. C. says it turns the water bluish white. I would suggest it might be sulphite of soda, as large quantities of caustic soda are used to make the pulp before it becomes paper. I hear no complaint of contaminated water from either Apollo or Leechburg and these towns lie between Saltsburg and Allegheny City, and their supply of water is from the same source as Allegheny City and Pittsburgh. Apollo is twelve miles from Saltsburg: Leechburg, twenty miles. I have made inquiry from authorities in Allegheny City and Pittsburg: they say they have noticed nothing wrong with the water supply to these cities.

If there is any pollution of these waters, it is mostly from decayed fish, a car load of which lay at Salina, five miles below Saltsburg. Since my inspection of cheese factory at Bulger, Smith township, Washington county, I have been experimenting on how to get rid of buttermilk and whey. Caustic soda is the best thing I have found, a drachm of which will separate one pound of buttermilk into curd and water, neutralize the butyric and lactic acid, rendering it almost inert and inoffensive, especially in an ordinary stream of water. A drum of caustic soda costing $20.00 dissolved, will neutralize 150,000 barrels of butter-milk: this is probably *much more* butter-milk than comes off, in a year, from the cheese made by Mr. P. H.

19—REPORT ON THE BEAVER FALLS RIVER WATER.

By J. R. THOMPSON, M. D., *Medical Inspector.*

The water contains salt in such quantities as to render it unfit (at any time) for drinking purposes. The people are forced to get their supply of drinking water from old wells and pumps about town.

Manufacturers complain that it foams in the steam boilers and forms incrustations. During and for some time after a freshet it is so full of salt that it can scarcely be used to wash clothes. The day I was there I could taste salt in the water, while in the office of Beaver Falls steel works, I had an opportunity to wash my hands in the water; the soap on wash stand was "Ivory soap," which contains cocoanut oil; a soap which contains cocoanut oil will wash fairly well, even in lime water, so that the test, with this soap, did not exhibit the brackish condition of the water to the same extent as did a piece of rosin soap which I had brought in afterwards. The nitrate of silver test also proved the presence of salt.

A number of oil wells in Butler county are producing this contamination of the water. Many of these wells are abandoned ones, flowing nothing but salt water, while others, through the aid of the pump, are producing small quantities of oil and immense quantities of salt water.

The steps to be taken for the abatement of this nuisance consist in requiring the property holders to plug up abandoned wells, and the owners of oil-producing wells to evaporate the water and sell the salt, or else plug and abandon all wells as soon as they require pumping. The manufacturers, and people in general, are up in arms about this pollution. The manufacturers are men of influence. In about ten (10) days from date they are going to the town of Butler to secure an injunction.

Mr. Hartman has kindly furnished me with a copy of tests made by Mr. Culmer at different points in the river.

20—INSPECTION AT WALLINGFORD, DELAWARE COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

September 24, 1890.

To-day I went to Wallingford, and examined the premises where the cases of typhoid fever had occurred.

The first case was a gentleman who had an office in the city and claimed that his attack originated from the odor which came up by his office from elevator. I found nothing at these premises to account for any sickness, and am inclined to believe that his attack did not originate at Wallingford.

At the house of Mr. H. there had been four cases, one died, two recovered, and one is still ill.

Two servants of Mr. F. had died of the disease, it is claimed that one had come to the place from Torresdale with the disease in her system.

In the house of Mr. Chas. Bateman, there had been three cases, one died, one recovered, and one had been sent to the hospital.

At this place was a pig pen in a very filthy condition, the drainage from which runs down into a ravine and must more or less pollute the running water below.

At the same place was "Briggs' row," containing some fifteen families, about sixty to seventy five souls. All the drainage of these houses is surface, and runs down a steep declivity to a small spring below, which is the only water supply for these people. Again the cows of the neighborhood are all allowed to drink from the water running from this spring, and are liable to supply milk of a dangerous character to those who use it.

I would earnestly urge that this locality be thoroughly cleaned; that steps be taken to prevent the drainage into the spring, and until this is done, that the water from this stream shall not be used for either the people or the cattle. That those who serve or use the milk so endangered shall be notified of the danger thus incurred.

The owner of the row is Joseph Briggs, of Media.

I also urge that the pig pen and premises of Chas. Bateman shall be thoroughly cleaned and the drainage be prevented from polluting the stream below.

I visited the school house within a short distance of Briggs' row," and found a bad condition of the water closet, which is placed inside the house by the door leading into the school room, and needs attention; the drinking water is just outside this closet, and as the water is drawn, the child inhales a terrible odor of urine by reason of improper position of the fixtures. All this imperatively demands immediate attention. There were forty-five scholars in this school.

Mr. Jacob Hibberd is the school director.

As there have already been so many cases, unless action is taken at once, I fear that there will be many more as the season advances.

I found that at the premises of Mr. F. the drainage had been carefully attended to, and that nothing was now permitted to run beyond his premises. I examined his drain and found it dry and so fixed as to allow nothing but the rain water to run in it.

21—INSPECTION AT POTTSTOWN, MONTGOMERY COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

September 24, 1890.

On September 3 I went to Pottstown to examine into the condition of the mill race there. I found that the whole matter had been greatly exaggerated that while a number of dead fish had floated down to the race, these had been cleared away at once, and had not in any way interfered with the passage of water. At the time of my visit the race was clear, and but one dead fish was seen. There was no cause for any action on the part of this Board.

22—INSPECTION OF THE ANDERSON WATER PURIFYING SYSTEM, AT LARDNER'S POINT PUMPING STATION, DELAWARE RIVER, PA., SEPTEMBER, 27, 1890.

The members of the Board having been invited to visit and inspect the Anderson water purifier system, at Lardner's Point pumping station, Delaware River, Pennsylvania, on Saturday afternoon September 27, 1890, by Easton Devonshire, Esquire, civil engineer, the following members accepted and visited the plant:—Benjamin Lee, M. D., secretary, Howard Murphy, C. E., Pemberton Dudley, M. D., and William B. Atkinson, M. D., medical inspector.

There were also present Prof. H. Leffmann, M. D., Messrs. L. Gillespie, John Lucas, W. E. Lockwood, Samuel Lucas, Charles E. Lewis, Dr. Taylor, E. L. Stephenson, E. R. Wood, J. V. P. Turner, Dr. J. H. Taylor, Albert Priestman, Hull, Eng., Dr. L. D. Keyser, W. F. Jones, W. J. Harkness, Dr. H. Hooker, J. D. Baker, Thomas Shaw, Rudolph Wood, James Spear, W. M. Castle, Rudolph Hering, C. E., Andrew Miller, Ellis Clarke and others.

Mr. E. Devonshire fully explained the working of the apparatus. The plant, which is only small, has a purifying capacity of one hundred thousand gallons in twenty-four hours. The essential feature of the plan consists of a revolving cylinder, hence its name of "Revolving Purifier." This cylinder is supported in a horizontal position by hollow trunions, which are capable of revolving in pedestal bearings. Attached to the internal periphery of this cylinder is a series of short curved shelves, arranged either in horizontal or diagonal rows at equal distances. Small scraps of metallic iron, of sufficient quantity to fill one tenth of the cylinder are then introduced. The revolving of the cylinder when set in motion causes the curved shelves to scoop up this metallic iron, and shower it through the water, thereby bringing it into forcible contact with the flowing water. This contact with the iron lasts from three and a half to four minutes. The action on the iron in the purifier is one of reduction, the carbonic acid brought by the impure water dissolving a minute portion of the metal and forming a protosalt of iron. About fifteen pounds of iron will waste in purifying one million gallons of water. There is no possibility of the iron sticking together. Any form of iron will answer the purpose, such as cast iron borings, or plate punchings, and give good results. The pieces of iron being constantly rubbed together presents a polished surface.

The above forms the first process in the purification of the water. On leaving the cylinder the oxygen of the atmosphere immediately acts on the water. To more effectually attain this end and transmit the oxygen, the water is passed through a trough filled with coke, into which air is constantly pumped.

The water is then passed on to a filter bed, eighteen inches in thickness of fine sand, on leaving which it is ready for domestic purposes.

Dr. H. Leffmann stated that the chemical test of this process showed that the organic matter was reduced from twenty-seven hundred to nine hundredth parts per million gallons, which is as pure as by any process known.

23—INSPECTIONS AT CATASAUQUA, ALLENTOWN AND BETHLEHEM, NORTHAMPTON COUNTY.

By CHAS. McINTIRE, M. D. *Medical Inspector.*

EASTON, PA., *October* 2, 1890.

I have spent some time at Catasauqua, Allentown and Bethlehem investigating the supposed prevalence of typhoid fever. On Thursday afternoon, September 25, I visited Catasauqua, interviewing two of the physicians, and again, on the morning of October 1, seeing another. From these I have learned that typhoid fever is rather endemic to Catasauqua, and it is not unusual to have as many cases during the summer as they have had this year; they have had more cases of fever than usual this year, but it seems to have been of a remittent character, frequently assuming a low form. This has sometimes been called typhoid fever by the physician when speaking to the patient for the purpose of keeeping him in the house. The potable water of Catasauqua is obtained either from wells, cisterns or that supplied by the water company. The first may, in all probability, be contaminated; the last is practicably a Lehigh river water, although taken from the Lehigh canal, and has no immediate source of sewage contamination The cistern water is probably pure. A complete sanitary survey would probably be necessary to determine the cause of the usual presence of typhoid fever. It is a manufacturing town, without any attempt at sewage, except when "sinks" are dug down to the rock limestone, and the waste from a house is allowed to flow into this pit to make its way where it will. I was told of one or two places where the local conditions might be prejudicial to health, but as your instructions included so much territory that I was anxious to know the condition of the three communities, so have not had the opportunity to visit them as yet.

As to Allentown, Dr. Reichart is the efficient health officer of the city, and I am glad to report he assures me that typhoid fever is not prevailing to any extent in Allentown. Unfortunately the system of making returns, both of communicable diseases and of deaths, is very imperfect and is not lived up to, so that accurate figures cannot be given. He has a record of but two deaths from typhoid in August, and of two more in September; but the September returns are not all in as yet, so that they may be increased, probably doubled. Until this summer they have not made any attempt to issue burial permits, and the plan meets opposition. One of the undertakers, at least, does not comply with the regulations, and he is now cited to appear before the board of health. I think if you were to address a letter to Dr. Reichard, as health officer, based upon this information, urging the necessity of physicians reporting at once all communicable diseases (which they do not do at all at present) and deaths (which they now report at the end of the month, and even then tardily), and the entire prohibition of interments until a permit has been issued by the board, which permit shall not be issued until the physician's certificate of death has been received by the board, you would be of assistance to Dr. Reichard in his desire to improve the registry system of the city. Dr. Reichard informs me that the more prevalent diseases have been cholera infantum and dysentery, and that there has not been any marked increase in any febrile affection. In this connection, as illustrative either of the careless statements made by physicians or utter failure of the Allentown system to keep track of the prevalence of communicable diseases, I would mention that a physician of South Bethlehem told me that an Allentown doctor claimed to have fifteen cases of typhoid under treatment.

At the Bethlehems, Old, West and South, the condition is quite different. There has been an unusual amount of sickness there during the past three months. It has been largely characterized by a high temperature—102° to 105°--much of it suggested typhoid fever in many of its symptoms, but not running the course of a true enteric, and along with this a number of cases pronounced, by the more careful and experienced, as typhoid fever, with a comparatively large proportion of deaths. There is a great difficulty to obtain reliable statistics from lack of reporting cases, and while I have found some conditions which are detrimental to health and to which I desire to call your attention in another report prepared with less haste than this, I have not yet been able to demonstrate the cause of the disease.

The problem is complicated, there are three corporations forming one commmunity, with a different water supply, with imperfect vital statistics or none at all, and a general difficulty of obtaining accurate information. There were a number of cases during November and December of last year resembling very much those of this summer, but the oncoming of the influenza prevented it receiving the attention that it should. In July of this year there was a re-occurrence of these, which has continued until now, although the disease is on the wane. Some of the physicians testify that they were busier during the summer than they were during the prevalence of la grippe, but they distinguish between a febrile condition with some of the typhoid symptoms and a true typhoid fever. Of the former there were hundreds of cases; of the latter I have endeavored to obtain some data to make a reliable estimate of the number of cases and the mortality. Some few of the Bethlehem physicians made partial returns; I say partial advisedly, for they informed me privately of cases that they have not reported; to these reported cases I have added the number of cases reported to me individually in my interviews. From fifteen of the physicians I have no reports at all, and from several more only the returns made which may be imperfect and would not include West or South Bethlehem cases. I have been able to make note of 125 cases during the last three months,and would estimate that there have been, at the least, 150 cases of typhoid fever during that time. My estimate of the number of deaths must be made from much less accurate data, as the board of health kept no record. I have made notes of fifteen deaths in the Bethlehems and have heard of some others outside of Bethlehem of persons who contracted the disease in Bethlehem. I should think that there have been twenty-five deaths at the least. This is the condition as far as investigated; there remains yet the tracing of a rumor of some cases of typhoid at the county poor house, the drainage from which empties into a branch of the Monocacy which flows through Bethlehem After this is done, it seems to me, that, without the inspection is carried on with thoroughness, investigating the water, milk or ice supply of every family where there have been cases, as well as the sanitary surroundings of each house, it will be hardly worth while to continue the inspection,for while I have suspicions that the water supply of Bethlehem is at fault, yet, unless it can be proved that every case was exposed to this possible source of contagion, or that there was some good reason other than this, it will be impossible to convince the people of Bethlehem and cause them to remedy the defect. If it is at all possible to continue the inspection, I should think that it would be very desirable, in view of the fact of the occurrence of the disease in December and then again in July.

I hope to be able to make a supplementary report detailing some sanitary defects that should, I think, be corrected, in a few days.

24—INSPECTION AT NEWVILLE, CUMBERLAND COUNTY.

By R. L. SIBBET, M. D., *Medical Inspector*

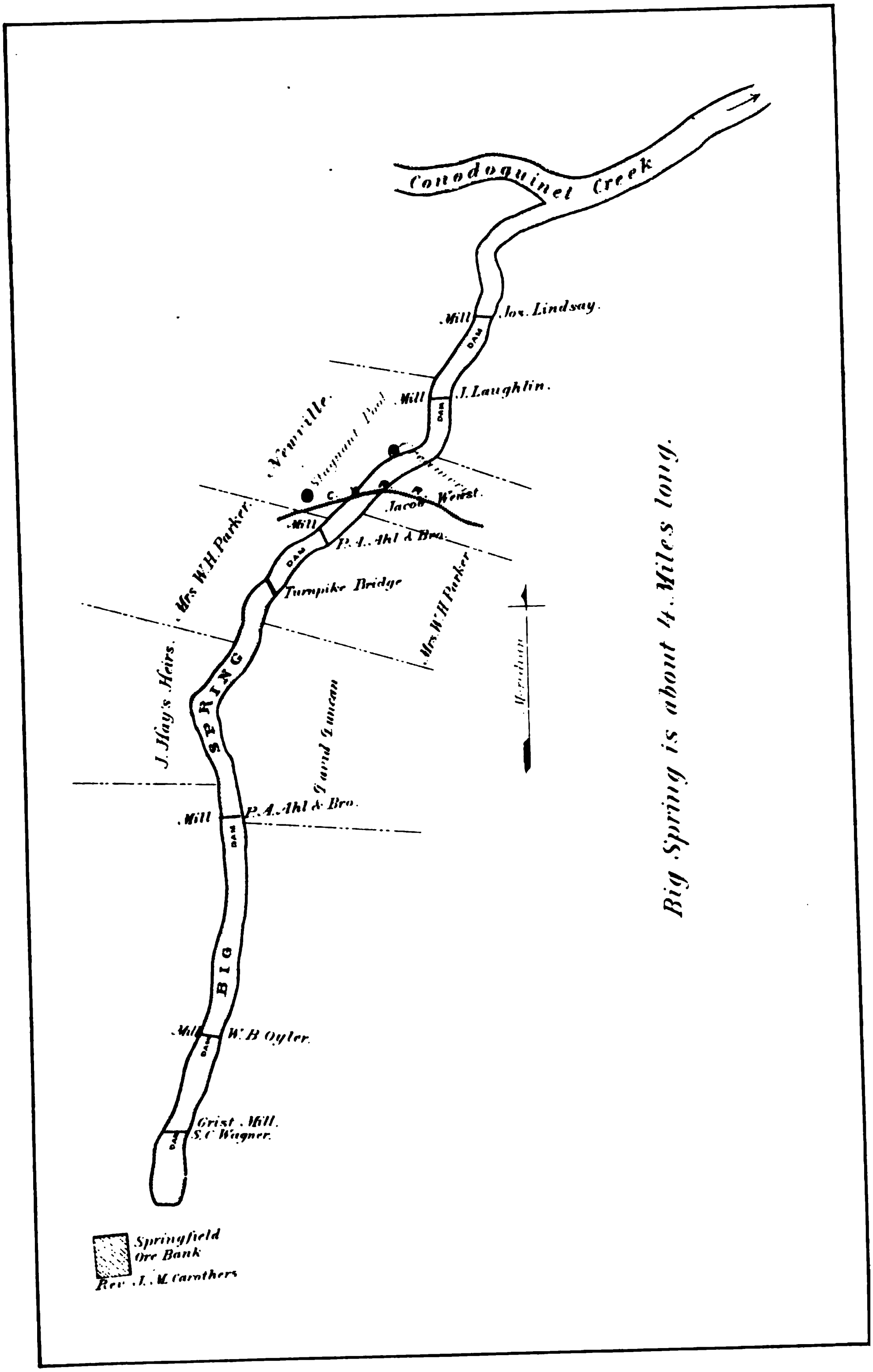
CARLISLE, PA., *October* 1, 1890.

I visited Newville, Cumberland county, September 17, had an interview with the sanitary committee of the borough council and was taken to see the two mill dams of which the people complain. I was not entirely satisfied with the information obtained from the committee, and consequently returned three days later. On this occasion I was taken to what has been called a "duck pond," in that part of the town more recently built up. This has likewise been a source of complaint for several years, and it is believed by medical gentlemen and others to have been the cause of typhoid fever in the immediate neighborhood. In conversation with the sanitary committee I secured from them the promise that this nuisance would be abated. It is in the center of a new street called Pennsylvania avenue.

I then set out for the head of the "Big Spring," and for an ore bank a quarter of a mile farther on. For ten years or more the wash from the ore bank has been accumulating until it covers about five or six acres of ground, and at some points is five or six feet deep. It is banked up along the turnpike and on several occasions when heavy rains came, it overflowed the turnpike and entered the head of the spring. The people along the spring, as well as the turnpike company, complain that this is a nuisance which should be abated. It is said to color the water several miles down the spring, and to form a sediment which gives rise to a growth of moss and water-cress which in turn has become a nuisance. The proprietor of the ore bank resides in another part of the state and I could not have an interview with him.

A careful inspection of the "Big Spring," (a sketch of which is hereto appended), reveals the fact that a larger amount of moss, water-cress and mud has been accumulating in the bed of the stream during the last few years than formerly. A very offensive odor arises from the stream at times, of which the people of Newville complain. There have been a few cases of typhoid fever every year, which it is said are due to the accumulations referred to.

My attention was also called to other insanitary conditions, not only along the course of the "Big Spring," but in the borough of Newville: most of the town, and dwelling houses and barns on either side of the spring are considerably above it, and the natural drainage is in the direction of the spring. As the population increases, the domestic and farm animals, such as horses, horned cattle, sheep and swine, increase and there is a corresponding increase in the quantity of animal matter thrown into the spring, which must necessarily pollute it. I gave my unqualified endorsement to the efforts of the borough council



Big Spring is about 4 Miles long.

of Newville to clean up the town, which they have full authority to do.

After this careful inspection of these several nuisances, I ordered, through the sanitary committee—

First. That the borough council of Newville construct a sewer under Pennsylvania avenue for the purpose of immediately draining that part of the town.

Second. That Rev. J. M. Carothers construct a stone wall of sufficient strength and height to prevent any further overflow of the wash from this ore bank.

Third. That all persons having a title to land through which the "Big Spring," flows including especially, Messrs. P. A. and D. V. Ahl, David Duncan, heirs of T. Hays, Mrs. W. H. Parker, Jacob Wease and John Laughlin, remove entirely the moss and water-cress from such land immediately, and during the month of October of every year hereafter.

Fourth. That all persons having a title to swamp land on either side of the natural water channel of the "Big Spring," proceed at once to utilize such swamp land by the transfer of soil from the adjacent hills.

Fifth. That Mr. John Laughlin and the Messrs. P. A. and D. V. Ahl drain their respective mill dams once every week during the six months of spring and summer, and once a month during the fall and winter.

The increase of population and consequent increase of domestic animals, and the necessity for mills and mill dams, require the foregoing rules to be faithfully observed, in order that the health of the people be preserved and disease prevented.

25—INSPECTION OF DEVON INN DRAINAGE.

By WM. B. ATKINSON, M. D., *Medical Inspector*.

October 8, 1890.

To-day I inspected the drainage of Devon Inn. Unfortunately, the place had just been closed for the season, and therefore the sewage flowing into the drains, etc., was greatly lessened. After a very careful examination of the whole situation, and in spite of the earnest assurance of the chief man left in charge, I am forced to the conviction that there is a great discharge into the creek of water of a doubtful character. I found a terra-cotta pipe apparently leading from the old drain discharging freely a clear but ill-smelling water. In tracing this up, I found a number of places where this flowed freely although I was assured that this drain had been completely closed. Mr. G—— who was in charge took the trouble to dig up the point of junction between the new drain leading into the filter and the former drain to prove to me that he was correct in saying that it was closed. Yet the continued flow in the whole length where it could be examined, convinces me that this flow comes from some source with a large supply in store, and not, as I was informed, only the swamp drainage. At present it is too late to act, but I would urge that the matter be fully investigated next spring prior to the opening of the Inn. Mr. D—— insists that at least every third day the filter requires to be thrown out of use in order to cleanse away the grease, etc. At these times, the flow of all sewage necessarily goes into the old drain and must in some way find a passage to the creek.

Inasmuch as Dr. Leffmann finds much doubtful matter in his examinations of the water from the old drain, and that obtained at the point of exit of the filtered water in the creek, great room for suspicion is shown. It was impossible to obtain a sample of water from the exit of the filter.

To thoroughly settle this matter, the hotel people should show by the best means that they do not at any time permit the sewage to enter the swamp; but that all goes into the filter. As the hotel will now be closed, I suggest that I be permitted again to inspect this stream said to flow only from the swamp. It ought to be greatly decreased if from the old drain, as there would now be no flow from the hotel. If, on the other hand, the flow continues about the same, we would have good reason to believe that it came from the swamp drainage or other source. The only other means would be for the hotel people to permit an inspection of the whole drainage, old and new, by a full exposure of the pipes, to show that no unsuspected connection still existed.

26—INSPECTION OF HORATIO, JEFFERSON COUNTY.

By SPENCER M. FREE, M. D., *Medical Inspector.*

Horatio, Jefferson county, Pennsylvania, a mining town of the Berwynd-White Coal Mining Company, is beautifully located on a hill about three miles from Punxsutawney along the banks of the Mahoning river. The hill slopes abruptly to the river on one side, and more gradually on the other two sides. The town has been well laid out in two long streets with an alley back of the houses of each sides of the streets, along which alley the coal houses, water-closets and pig-pens are placed. These streets are thrown up in the center, with a gutter at each side. No paving exists. Water pipes extend along them, and a fire plug is located at each corner.

The population is about 1,000, consisting almost entirely of miners and their families.

The water supply is through pipes running to each house, in the kitchen of which is a faucet. The water is pumped from a dam in the Mahoning river to two wooden tanks one-fourth of a mile from the town and on high ground. From these tanks it is distributed to the houses. The water is taken directly from the river, the intake pipe being covered with a strainer. This water is intended only for scrubbing, washing, etc. The drinking water is supposed to come from a well situated at the foot of one street and a spring situated about one-eighth of a mile from the head of the other street. The well is drilled; it is five inches in diameter and seventy feet deep; it is cased to the rock; I could not obtain the exact distance to the rock.

The spring flows from beneath a pile of rocks on the hillside. The water is held in a wooden box two feet long, one foot deep and fifteen inches wide. The box is open and overflows all the time. All kinds of vessels are dipped into this box and filled with water. They, of course, are in all grades of uncleanliness. The river water being in each kitchen and the well and spring water being at some distance, leads me to believe that much of the river water is used for culinary and drinking purposes, though the people all seem to know that it is not intended for that purpose.

There is a small spring near the mules barn at which a few families get water.

Drainage from the cellars is provided at the rear by a six-inch pipe of terra cotta, running the entire length of each row of houses. No provision is made for any further drainage.

The water-closets are holes in the ground eight feet long, three feet wide and four feet deep, over which is erected a small wooden house divided into two compartments. One of these accommodates the people from two houses, one block. No planking is put into these holes, hence, in a very short time they cave in. Found no closet that was not well filled, and from many of them the contents were flowing over the surrounding surface.

No provision is made for the disposal of dishwater, slops, garbage, etc. These things I found in the alleys and around the back doors of most houses.

In many places the stench arising from these places was very perceptible and offensive, and probably unhealthy.

The amount of sickness at the present time is not much if any at all above the usual amount that may be expected among these people, at least so far as I could learn. None of the physicians could give me the exact number of cases during the past few months, nor the number of deaths; and as no vital statistics are kept for the place, I can only make approximate estimates.

There is no doubt that for several months the cases of sickness have been unusual in number, the best authority placing them at four times the number of former years, in a similar population.

The death rate was also much higher than formerly, the proportion of fatal cases to the whole number treated was high.

In the winter of 1889 and 1890 la grippe took a severe hold of this and surrounding towns, many cases developing pneumonia and severe bronchitis. This was followed by a severe epidemic of rubeola, many children died with this disease complicated with bronchitis and pneumonia. Following this came epidemic dysentery which affected in some degree almost the entire population. It was a severe form, causing death in some cases within a very short time.

The large death rate is due largely, I think, to the bad physical condition of the people following la grippe and measles.

The causes of this great amount of sickness are probably four.

1st. The introduction of epidemic (contagious) diseases without any quarantine measures used to prevent their spread.

2d. Vitiated atmosphere by bad water closets, dirty alleys, and decaying garbage, slops, etc.

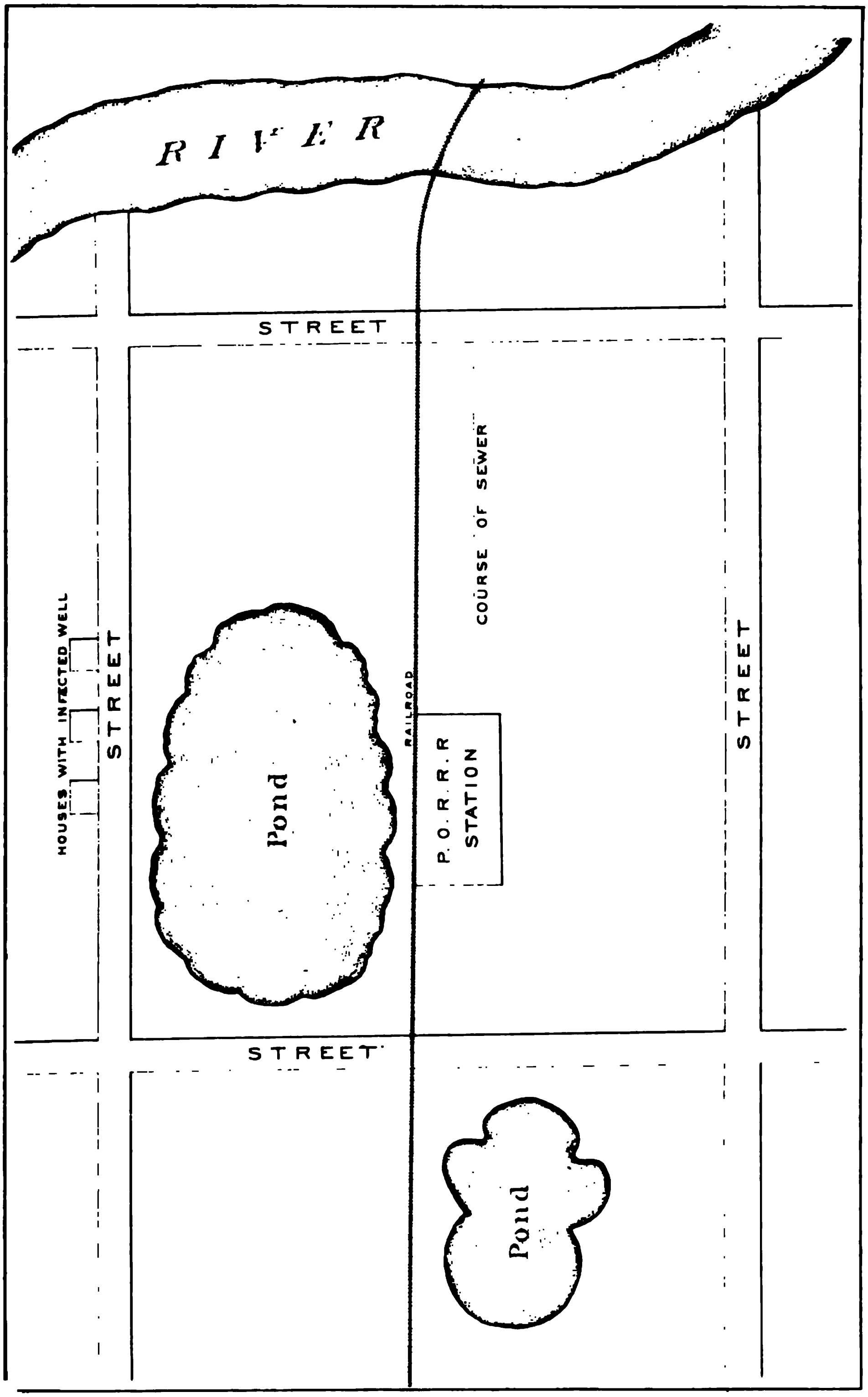
3d. Drinking water of poor quality; for I think that the river water was many times used instead of that from the pump and spring, and this latter, especially if taken from the spring, was liable to contamination, as can readily be seen by reference to the preceding pages.

4th. The weakness of the body, because of severe epidemics of la grippe and rubeola, from which the people had scarcely recovered when the epidemic dysentery occurred.

The recent epidemics are about at an end unless they recur, but the danger from some other one is ever imminent.

I therefore suggest the following: That a board of health be established by the men or by the company; that a system of rules be adopted and rigorously enforced, so that no nuisance can long exist within or about the houses or alleys; that thorough quarantine be maintained, so that no contagious disease can be brought to the place or, if brought, can be spread beyond the house where it first locates itself; that a system of sewerage be adopted instead of the present water closets, or that they be made much larger in every way and thoroughly planked and framed so that they cannot cave in; that the springs be abandoned or thoroughly cleaned, walled, cemented and closeted, so that nothing can be introduced directly into them to their injury.

The overflow can be conducted by a pipe from which people can obtain their supply; that the river be abandoned as a source of water supply, and a deep well, 500 feet, be drilled or cased to within one or two hundred feet of the bottom, and the water from this well be pumped to the tanks and distributed to the houses. There is no doubt that the present supply can be improved by the change above suggested in the


RIVER
STREET
HOUSES WITH INFECTED WELL
STREET
Pond
RAILROAD
P. O. R. R
STATION
COURSE OF SEWER
STREET
STREET
Pond

springs; by the removal of the dam and the obtaining of river water from a flowing stream instead of from a stagnant one; by placing a good filter between the river and the place of intake, so that no unfiltered water can be pumped into the tank, and by the thorough boiling of all water before using it for drinking purposes.

If these provisions can be carried out the present supply would be ample and safe. If they cannot be carried out, the present supply is in constant danger of contamination, and though it may not be responsible to any great degree for the past sickness, it may be responsible for that of the future.

I do not discover that the dam is a nuisance at the present time, though I readily concede that a river with a flowing stream will be better than with a stagnant one; and its removal would be a benefit.

I want to extend my thanks to the citizens, the company, the physicians, and to all who so kindly and so courteously assisted me in my investigation. There are few mining towns so admirably located for thorough sanitary work, and by a few changes that need not entail a great expenditure of money or time, Horatio can be second to no town in the country.

27—INSPECTION AT SUNBURY, NORTHUMBERLAND COUNTY.

By WM. LEISER, JR., M. D., *Medical Inspector.*

LEWISBURG, *October* 7, 1890.

I visited Sunbury, Northumberland county, October 4, in company with the president of the State Board of Health, George G. Groff, M. D., and we investigated the sanitary condition of the town with relation to the outbreak of typhoid fever complained of.

We found the cases, twelve in number, suffering from this disease limited to a very small district, in fact to two or three houses contiguous to one another, and all supplied with water from one and the same well.

The surroundings are in a very unhealthy condition. The yards are small, and the surface of the ground and surface drainage incline towards the wells and the houses. Chicken-yards, hog-pens, cesspools and wells are all within a few feet of one another. The soil is a mixture of sand and coarse gravel.

There is a large, low pond in front of the square or street on which the houses above-mentioned are located, and between this street and the station of the Philadelphia and Reading Railroad Company, in which pond there is constantly stagnant water. Complaint is made that the contents of the water-closets in this railroad station seep through into this pond. The railroad company has a sewer from the station emptying into the river, but it is alleged that this sewer has always been closed, so that the contents of the closets are not discharged into the river. The effect of this would be, of course, to make the sewer a cesspool. But if this be true, the distance between this sewer and this pond is greater than the average distance between the cesspools of the town and the wells and houses to which they belong, and the sewer constitutes merely a cesspool, one among many, as cesspools are almost exclusively used.

I think that the well from which the houses containing these typhoid fever cases are supplied should be abandoned and filled up; and I unhestitatingly declare it to be a nuisance, prejudicial to the public health.

Since seventy-five per cent. of the people in the town use hydrant water, brought to the town from Plum creek, a branch or tributary of the Shamokin creek, and are free from typhoid fever, I would advise the substitution of a hydrant for the above infected well.

I would also condemn the above-mentioned as a nuisance, prejudicial to the public health, and would urge that it, as well as a number of other ponds of a similar character in the town, be filled up.

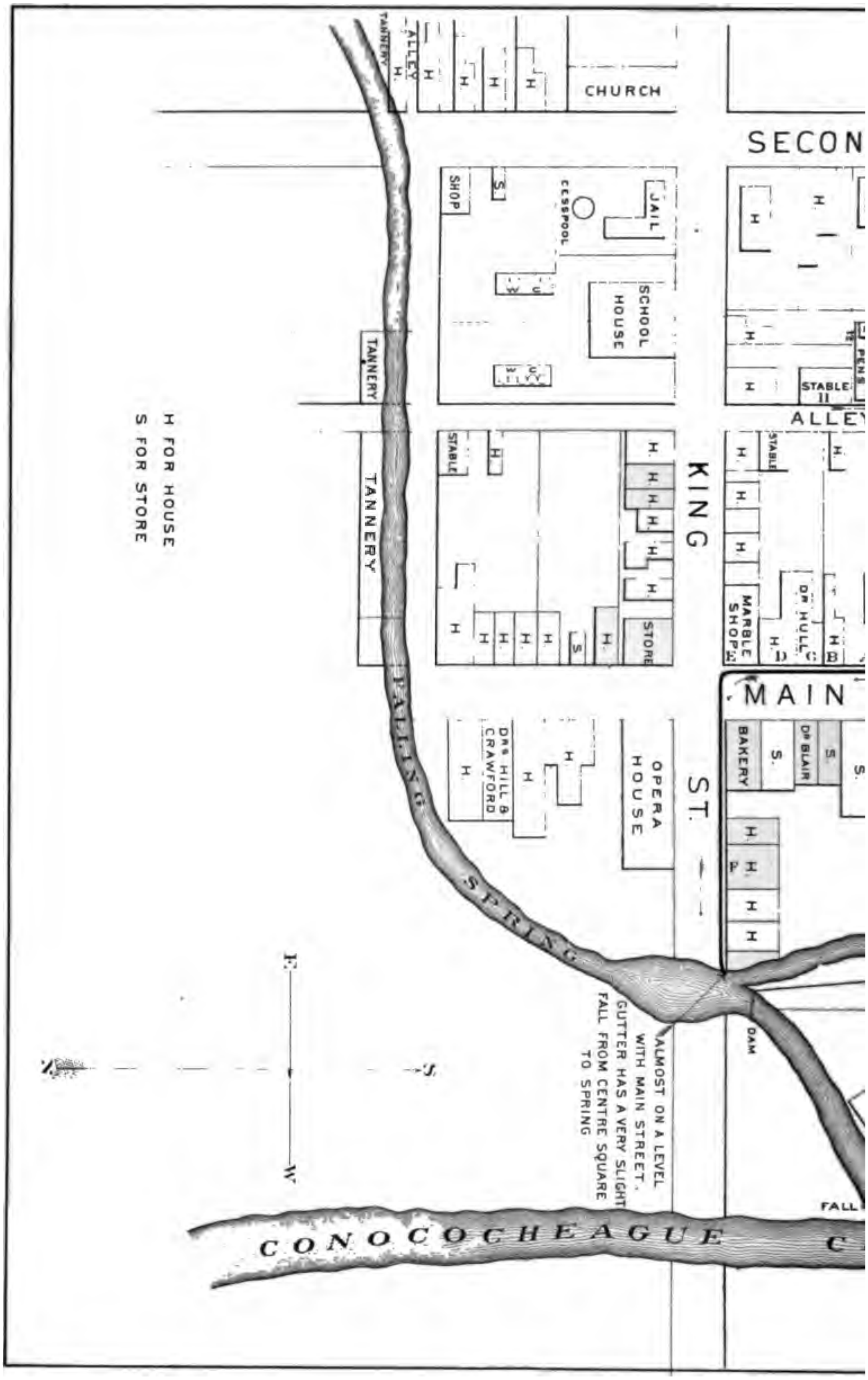
28—INSPECTION OF CHAMBERSBURG, FRANKLIN COUNTY.

By R. L. SIBBETT, M. D., *Medical Inspector.*

CARLISLE, PA., *October* 5, 1890.

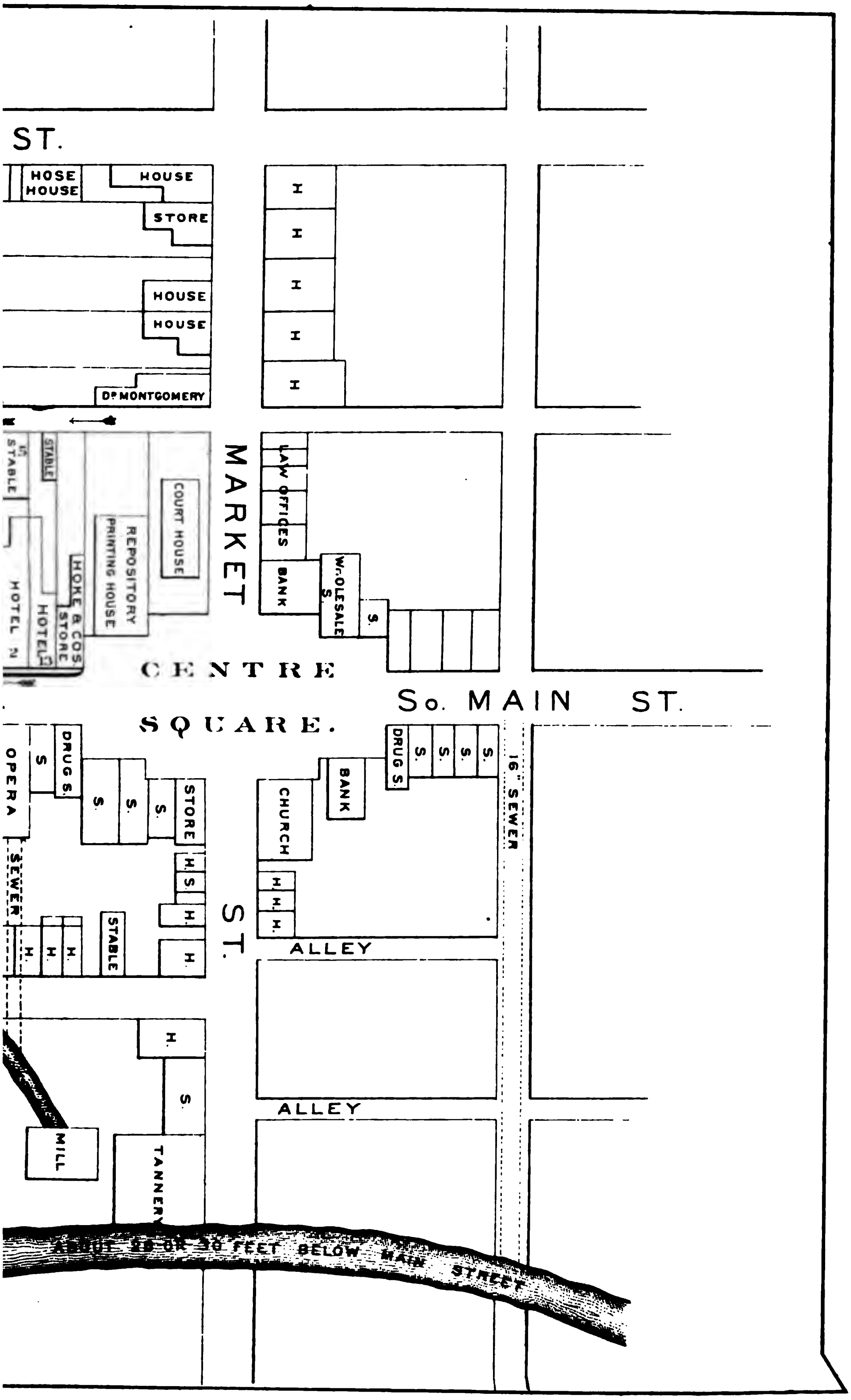
I went to Chambersburg, September 25, to ascertain the cause or causes of typhoid fever and other diseases, of which the physicians and others have frequently complained. I was kindly received by Drs. Hull and Montgomery, and after making a careful inspection of the principal nuisances, I obtained an interview with a dozen or more residents, including the burgess, four or five councilmen and one hotel proprietor.

Chambersburg is favorably locate on the east bank of the Conococheague creek, as will appear from the sketch herewith presented: the natural drainage is towards the creek on the west and the Falling Spring on the north: and were it not that the latter is used as a dam to supply several mills, drainage would not be much obstructed. The dam, the race, and the mills, cannot be very easily removed. They may have become a necessity for the manufacture of flour, cloth, etc., but they have certainly produced the necessity for sewers. The skill of the borough council has already been exhausted in efforts at surface draining. On the supposition that the pig-pens were entirely excluded



H FOR HOUSE
S FOR STORE

ALMOST ON A LEVEL WITH MAIN STREET. GUTTER HAS A VERY SLIGHT FALL FROM CENTRE SQUARE TO SPRING


ST.
HOSE HOUSE
HOUSE
STORE
HOUSE
HOUSE
Dr MONTGOMERY
H
H
H
H
H
STABLE
STABLE
COURT HOUSE
REPOSITORY
PRINTING HOUSE
HOKE & COS STORE
HOTEL
HOTEL
MARKET
LAW OFFICES
BANK
Wr. OLESALE S.
S.
CENTRE
SQUARE.
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16" SEWER
BANK
CHURCH
H.
H.
H.
ALLEY
ALLEY
H.
S.
MILL
TANNERY
ABOUT 20 OR 30 FEET BELOW MAIN STREET

from this part of the borough, the numerous stables and cesspools would still constitute an unqualified nuisance and would be a real cause of disease.

We need only refer to a half block of the town to discover that there is the greatest necessity for interference. This is bounded on the east by Market street, on the south by Main street, on the west by King street and on the north by an alley. It contains the court house, Repository printing house, three principal hotels and their stables, a dry goods store, a drug store, four dwelling houses and a marble yard. On still higher ground in the rear, and on the other side of the alley, are two pig-pens one of which had fifty one pigs in it; sometimes sixty have been fattened here at one time; also four stables in which fifty horses are sometimes kept. The natural drainage from these hotel stables, livery stables, pig-pens and cesspools is down upon Main and King streets and a large part of it is absorbed in the gutters, or is evaporated in front of the hotels and dwelling houses before it reaches the Falling Spring. Thus the soil of the oldest part of the town has become thoroughly saturated with animal matter.

Two of the resident physicians of this part of town furnished the data which prove a direct connection between these well-known causes of malarial diseases and their patients. Within the past few years there have been an unusual number of cases of disease which are believed to have arisen from the inhalation of an impure atmosphere in this neighborhood.

The water supply is believed to be good though it is not abundant. It is forced up from the center of the Conococheague into a reservoir and thence distributed through town.

I was taken to two springs which are supposed to have been the cause of several recent cases of typhoid fever. The first on the south side of Falling Spring has very suspicious surroundings, which did not exist a few years ago; the second, on the north of the spring, has nothing about it that would cause suspicion The fever cases in the neighborhood have been produced very likely by causes near the stables and kitchens of the families in which the disease is.

Until further instructions have been given by the State Board of Health to the burgess and borough council of Chambersburg, the following has been addressed to them.

First. That the borough council of Chambersburg appoint a sanitary committee whose duty it shall be to make a special study of the cause or causes of communicable and preventable diseases in the town and to act under the direction of the council.

Second. That the borough council of Chambersburg immediately proceed to construct a system of sewers for a part of the town. There is no other remedy for the evils which exist. After a hundred years of occupancy the soil has become saturated with animal matter. You will therefore consider the following plan: Construct a large sewer under the center of King street beginning at Main street and extending under the mill dam, with its output in the Conococheague. From this sewer construct a smaller one under the center of Main street to a point near Center square, and from this, at right angles, construct another up the alley which may receive the surface drainage of Second street. These sewers are imperatively needed for the health of the citizens in this part of the town, who are heavy tax-payers. In the course of time there will be a necessity for other sewers; one in the center of Market street and another in a street farther south. These sewers must be deep enough to receive the drainage from water-closets or they will only be of temporary use and will soon have to be replaced.

Third. That the borough council of Chambersburg is hereby authorized by the State Board of Health to notify the proprietors of the mill-dam within the borough limits to construct a floodgate so that said mill-dam may be drained at least once every month, and further that said mill-dam be dredged every year, and all accumulations of mud and animal matter removed.

Fourth. That the council exclude from the borough all pig-pens, except those for which written agreements have been made.

Fifth. That the proprietors of stables for horses, cows and pigs, remove all excrement or manure from their premises once a month, so that when heavy rains come the streets and alleys may not be polluted.

Sixth. That the water-closets of the hotels and court-house be connected with the sewers as soon as possible.

Seventh. That the ordinary disinfectants be provided by the borough council for public use in the streets and alleys.

Places which drain into gutter on Main and King streets:

1. National Hotel kitchen, bar-room, bath tubs, etc. 2. Montgomery Hotel kitchen, bar-room, bath tubs, etc. Drug store. 3. Large sale stable. 4. Hog pen, 10 to 20 hogs. 5. Livery stable. 6. Large sale stable. 7. Stable. 8. Stable. 9. Kitchen. 10. Large manure pile. 11. Stable. 12. Large hog pen, 50 to 60 hogs. 13. McKinley Hotel.

Diseases of an infectious nature occurring in the neighborhood of gutter, within the personal knowledge of the writer:

A. Cases of malarial fevers—light. B. Malarial fevers, repeated. Last case, congestive chill, almost terminated fatally, a couple of months ago. A death several years ago; a young girl—gradual decline—thought to be of malarial nature—finally meningitis—then thought to be of tuberculous nature. C. Repeated attacks of malarial fever in all members of family. Hired girl, "typho-malarial." D. Malarial fever, repeated attacks, leading at last to abscess of the liver; recovery; has had chills since. Dysentery in this house twice. E. Proprietor had typhoid fever. F. Malarial; no personal knowledge of other houses as I was not the physician to them, but the locality has the reputation of being unhealthy. West side of street are stores; people up stairs; not so much sickness, though some malarial cases.

29—INSPECTION AT STATE LINE, FRANKLIN COUNTY

By C. L. GUMMERT, M. D., *Medical Inspector.*

BROWNSVILLE, PA., *October* 13, 1890.

I proceeded to State Line on October 7, and found that there had been three or four cases and one death from typhoid fever; that, at present, there is no one sick.

At Ellerslie, Md., the disease prevails to a great extent. There have been thirty-nine cases to date and five deaths. Through the kindness of Dr. Smith, the only physician here, I was enabled to visit quite a number of cases and found them running the typical course of typhoid. The disease is on the decrease. Most of the inhabitants of Ellerslie work in the Pennsylvania railroad shops and pipe line at or beyond State Line in Pennsylvania, hence the complaint from State Line. I find the cause to be contaminated water supply; the soil is sandy and alluvial, and the wells are from ten to eighteen feet deep when a bluish clay impervious to water is struck, and in this the well basin is formed. The wells are on the low ground and the water closets and stables on the high ground, back; hence, all the drainage is toward the well and house, and, as the discharges from the typhoid cases are either thrown on the surface or in the privy it is only a little while till they filter through the gravelly soil to the bluish clay below and are thus distributed over the whole town. I hold to this theory of contamination of the water from the fact that Confluence, Rockwood, Casseman, Somerset, Hyndman and Ellerslie have not been free from typhoid fever for over two years, and their soil and water supply are the same as Ellerslie, while several other little towns that get their water from the hills back of them never have typhoid fever. In looking after other places along the route on my way home, I found two cases typhoid at Hyndman, Bedford county; two at Rockwood and three at Confluence in Somerset county; also was told there were several cases at Somerset. The only way to properly stop these periodical outbreaks in these places will be to do away with the wells and get their water from the hills, which will cost them very little.

30—INSPECTION AT NORWOOD, DELAWARE COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

On October 11 I inspected Norwood. The entire drainage is surface, with the ordinary gutters to carry off the fluids into the ditches or streams in the neighborhood. I found these gutters rarely in a proper condition, being generally choked by growth of weeds, grass, etc., and stopped by accumulations of dirt. The water supply is from the ordinary dug well, and I am assured that few if any of these are cemented or really secured from the inflow of surface or other drainage. Again the cesspools are of the ordinary kind never cemented, thus permitting the escape of the fluid excreta into the surrounding soil.

The effect of this may be seen from a sketch of the geological formation below:

14 inches,	loam	very porous.
2 to 7 feet,	yellow clay	porous.
4 to 8 feet,	blue clay	not porous.
	quartz and mica.	

From this will be seen a result, as stated by a well digger, who says, "many times in cleaning out drinking wells, he has seen along the sides the dark streak of the waste of privy wells that had found its way through the porous strata."

In a house on Chester pike, the cellar was in a bad state owing to water in the cellar; this appeared to run in from the surrounding ground and there had been a pump on the outside to pump it out, but this now is useless. In this house the family have three children sick from a throat affection. I was told that the former tenant last spring had a similar trouble with one or more deaths. Opposite this house is a pond or swamp filled with water, into which all the drainage of a row of houses above empties. I found a fifteen feet alley running from Welcome avenue to Chester pike. This was irregularly dug or plowed out and a very filthy stream of drainage was running thorough it, emptying into the swamp or pond at the end by the Lutheran church.

I visited a number of the houses and all seemed to be without cause of complaint, though the same trouble as to preventing the flow of the surface drainage and the percolation of the cesspool matter into the drinking wells would obtain. I found little if any other sickness, and the physicians assured me they had at the time no special illness to treat.

Under present conditions it would seem useless to propose a change as to the drainage. I would suggest, however, that the house alluded to on Chester pike be at once put into a proper condition by draining the cellar, and that steps be taken to prevent any more inflow of the water. That then the cellar be well aired and disinfected.

That the fifteen feet alley running from Welcome avenue to the pike be drained and filled so as to prevent it again becoming a source of complaint. It is now much below the grade by reason, as I am told, of the removal of the earth for other purposes.

Were any means in the power of the board, the property owners should be instructed to have their cesspools cemented in a most thorough manner, to prevent the outflow of the filth into the pervious soil, and thence into the drinking wells.

I would suggest that the Chester pike authorities be urged to clean and keep in a proper condition, their gutters or water courses, and thus aid in the general drainage of the place.

31–INSPECTION AT DAUPHIN, DAUPHIN COUNTY.

By P. A. HARTMAN, M. D., *Medical Inspector.*

This portion of the town complained of is built on the side of a hill through which runs the main street, cut down on its east side. The embankment supported in part by a stone wall and a slope. The soil is a mixed gravel and sand. Both sides of the street are compactly built up with dwelling houses which are supplied with water for all purposes by wells sunk behind each house. Each house has also a privy vault. There is no sewage; everything is thrown out in the lots or is carried off by surface drainage.

This condition of affairs has existed for many years and, as a result, the earth has become saturated with all kinds of slops and filth.

The people living on the east side of the street, drain their slops into an imperfect street gutter, from which it is carried under the street into the gutter on the west side, and then drained down the slope. Those people living on the west side of the street have been, for some months back, suffering from diphtheria, dysentery and their kindred diseases.

Dr. U has been compelled to abandon both wells on his property, the water of which is polluted and unfit for use. This condition of affairs is brought about by the system of drainage and the filth saturation of the earth.

After a careful investigation, I have come to the conclusion that the complaints are well founded, and the conditions as given above constitute a public nuisance, prejudicial to the public health and should be abated.

The only certain way to do this, on account of the nature of the soil and the slope of the ground, is to construct an underground sewer opening into the canal or Stony creek, either of which is but a short distance away. The cost of this will not be great and will be of lasting benefit to those interested.

32—INSPECTION AT BETHLEHEM, NORTHAMPTON COUNTY.

By CHAS. McINTIRE, M. D., *Medical Inspector.*

EASTON, PA., *October* 18, 1890.

In reference to the dumping ground for the borough of Bethlehem, situated in Bethlehem township, about which you make inquiry, I would report that I visited it on the 29th of September in company with Mr. Yeakel, chairman of the board of health and a member of the town council.

The disposal of garbage had been left almost to take care of itself until quite recently, as it had been used in filling up outlots in the borough, upon which dwelling houses may be erected in a few years. This was stopped and a meadow lot, frequently overflowed by the Monocacy creek, was the next place for dumping. This was situated in West Bethlehem and was soon prohibited by them. If I am correctly informed the board of health advised the erection of a garbage furnace; at least Mr. Yeakel told me that this was his desire but that council did not agree with him. The board then obained, by purchase, a lot in Bethlehem township as a dumping place for their garbage. The place was selected with a great deal of wisdom. The land is not of much value, the haul is not a long one, it is situated on a hill side and is covered with a growth of young forest trees. The bottom of the hill joins the valley of the Monocacy, but the drainage would, except in exceptionally heavy showers, filter through two hundred to three hundred feet of soil before reaching the creek, and there are no dwelling houses directly below the lot. Their plan of disposing of the garbage is to dump it on the ground, cover it with a layer of slacked lime and then with earth. There is an evident honest effort to dispose of the garbage of the borough so as to give no offense to the neighboring residents, who are all higher up on the hill.

I went down to the dumping place and examined it with some care. There was nothing to offend either the eye or the nose, but while standing on the brow of the hill, I perceived every now and then a sour smell, not intense, but perceptible. I suggested that more earth should be used in conveying, while commending the care taken. This Mr. Yeakel promised should be done, and I afterward heard him direct the driver of one of the garbage wagons to do so. The thought of suggesting the digging of pits occurred to me at the time, but I did not do it, because of the greater danger of carelessness, the drivers might wait for several days for the pit to be filled before they would cover it.

There are some things about the garbage disposal which are not to be commended, are detrimental to the public comfort if not to their health, and which, I think, should be changed. I also called Mr.

Yeakel's attention to these and promised to write him about it, but as I found the correct methods fully expressed in the pamphlet of the Board giving rules for the guidance of local boards of health, I sent him a marked copy of that. The gathering and carting of the garbage is done by a resident of Bethlehem as a private business venture, receiving his pay from the householders and not, I think, regulated by the borough board of health. The kitchen refuse is gathered with the ashes, there is no attempt made to separate them in the wagons, which are not covered nor water tight. I suggested to Mr. Yeakel that the kitchen slop should be kept entirely separated from the ashes, that each wagon should be provided with a water-tight covered compartment, and, since without the greatest care the dumping ground might be made a nuisance, that the garbage be disinfected as it was collected, special care being also taken to keep the garbage container clean. The disinfectant that I proposed was a solution of sulphate of iron. Mr. Yeakel seemed to think that these suggestions were impracticable.

It should be stated that the dweller in the nearest house has an old grudge against the borough, having lost a suit for damages against the borough, for a change of grade, and might not, therefore, be content with anything short of a removal of the dumping ground, and that the others are afraid that Bethlehem is carrying all the disease-producing material into their neighborhood for their hurt.

I would suggest that the borough authorities be advised to make such regulations that will cause the garbage to be collected in the manner indicated, failing in which that means be taken to restrain them using their present dumping ground, beyond their corporate limits, until they do collect and cart their garbage in such a way as not to give offense, and that they be urged to frequently inspect the dumping ground to see that the carters are covering the garbage with enough earth to effectually absorb the odors. Also that the complainants be informed of the action of the board, and any unnecessary fears allayed by assuring them that the garbage dump is not a source of danger.

33—INSPECTION AT FARRANDSVILLE, CLINTON COUNTY.

By S. M. FREE, M. D., *Medical Inspector.*

This village is located six miles west of Lock Haven, on the line of the Philadelphia and Erie railroad. It lies in a narrow valley. The hills rise abruptly on either side from two hundred to four hundred feet.

The population is a mixed one of about four hundred.

The industries are the manufacture of lumber, fire brick and cigars.

The houses are scattered irregularly along the valley for a mile: by far the larger part of them being on the same side of the creek.

The water supply is varied. The majority of the people obtain water from springs, some of these are walled or boxed and covered; most of them are not.

A water supply is furnished to some of the people from a reservoir supplied by a mountain stream, and located about three-fourths of a mile from the village, with no dwellings above it on the mountain or stream.

The company which owns the fire brick works, Fredericks, Monroe & Co., does all it can to keep the reservoir clean. This water is carried in iron pipes to the fire brick factory and to several places in the village, and there distributed by hydrants.

The water closets are holes dug in the ground, not planked to prevent caving in, with houses set over them.

The personal cleanliness of the people and houses is only fair. Improvement should be made in this direction, especially at two or three localities where there are several houses close together.

The epidemic of typhoid fever began at this village in August.

There have been twenty-four cases and one case developing the disease in all probability, making twenty-five cases. Of these cases thirteen were men who worked in the brick factory. They reside in different parts of the village; one of them on top of the mountain four hundred feet above the valley. This peculiarity of the epidemic led me to carefully examine for the cause about the factory.

I find that the drinking water used in the factory is carried from a spring not far distant. This spring is in a depressed locality at the foot of a high hill, about one hundred and fifty feet from Mr. B.'s residence and below it in elevation. The spring is so low that the waste from it flows very sluggishly, and in times of rains and high water it dams back into the spring. The wash from the spring drains directly into the spring, also that from the hill from Mr. B.'s yard and garden, and from the railroad switch. No provision has been made for shutting out surface water, and I am told that the spring is always muddy after a rain. Another spring almost as badly located I found at the upper end of the brick factory settlement. None of this water was used in the factory and as far as I could find out very little of it was used for any purpose by any one.

The B. spring as it is called I find is the most popular one, and I find that nearly all the families in the factory neighborhood have been using it for drinking purposes to some extent during the summer, as it was cooler water than that in the hydrants.

Several other springs I found located on the mountain side at higher elevation than the houses. No sickness however occurred in any of the families using these waters, except in a few instances, and in these the ones affected were the men working at the brick factory, and not the women and children residing at home.

It can be clearly shown that every person who has had the fever, has been drinking water from the B. spring, unless, I except the case of Mrs. S. who lives a half mile west of the village. She had the fever in the latter part of June. She visited quite often in the village. One family she visited afterwards had the fever. This family used water from the B. spring, and it is entirely possible that Mrs. S. drank water from this spring. The circumstantial evidence pointed so strongly to the B. spring as the cause that I tried to discover the source of contamination.

In finding out who Mrs. B. was I remembered that in the fall of 1889 I had attended Mr. B.'s son and family through an attack of severe typhoid fever, in a lumber camp a few miles from Beechtree, Pennsylvania.

Another son of Mr. B.'s living in this camp took the fever and was sent to the Addison Hospital. As soon as he recovered he went to his father's home where he was sick for some time longer.

A third son of Mr. B. also living in this camp became affected with symptoms of the fever and was ordered to the hospital. He went to his home instead, I was afterwards informed, where he was sick for three or four weeks, but not ill enough to call in a physician.

In the spring of 1890 this third son after being in this same lumber camp again, again went home sick and was there for about two weeks but did not call a physician.

During the summer of 1890 typhoid fever again broke out at the lumber camp above mentioned, and exists there at this writing.

It seems entirely possible that the sons of Mr. B., by their going home carried the disease with them and through the water closet or through surface drainage, their discharge being thrown on the ground, infected the spring and the spring in turn infected those drinking its waters.

In view of these facts I suggest that the B. spring and the other low ground spring be absolutely closed up; and that all water for the factory settlement be taken from the reservoir.

Dr. R. B. Watson, of Lock Haven, the attending physician of most of the cases, had given many wise instructions which I endorsed.

I also suggest that some circulars of the State Board of Health on the precautions against typhoid fever be sent to Dr. Watson who very kindly agreed to distribute them.

The B. spring is not on land owned by Fredericks, Monroe & Co., but I suggest that they be ordered to fill it up nevertheless and that they do not permit it to be opened.

34—INSPECTION OF PUNXSUTAWNEY, JEFFERSON COUNTY.

By S. M. FREE, M. D., *Medical Inspector.*

This town is located in a flat, which, a few years ago, was mostly a swamp. It lies on either side of the Mahoning river, with not much fall naturally at this point, and is made still more sluggish by being dammed for milling purposes about midway of the town. Hills rise quite abruptly on the west side: more gradually on the east side of the town. The valley is about three-fourths of a mile wide.

The business part of the place lies quite flat, having very little drainage. This is also largely used for residences, though during the past few years many citizens are building homes on the surrounding hills.

The population is 2,760. In addition to this there is a large floating population, made up mostly of laboring people going to and from the surrounding mines.

The water closets are the usual holes in the ground, without planking in most instances, covered by small houses.

The water supply is from wells and from the river. The river water is allowed to run through a channel filled with broken stone and charcoal into a large hole in the ground. From this it is pumped into tanks on a hill, and from there it is distributed to the borough in iron pipes. The supply is taken from the upper end of the back water of the mill dam, within the borough limits, a short distance below the entrance of a creek that drains a couple of mining towns, as well as a part of the borough. The river itself, for some miles, is a sluggish, muddy bottomed stream, receiving the waste from several saw mills, a tannery or two, and two villages of considerable size. Altogether it is not a very good source of supply, nor are the methods of obtaining it to be commended. About one-half of the people use this water, and the other half use water from wells. These are mostly dug; some are driven.

The soil is soft; a kind of a wash from the hills for eight to ten feet when a gravel is struck. The water comes into the wells so rapidly when this is struck, that the wells cannot be easily sunk deeper. Hence, nearly all of them are from eight to ten feet deep. The height of the water in them varies according to the height of the river. When the river is high the cellars are also filled with water.

Some years ago a dam existed at the lower end of the borough; cellars were wet or dry as the river was high or low. Since the removal of the dam the cellars have been dry, except in times of very high water.

The conclusion seems reasonable that the well water is river water filtered through a gravel bed.

The town of itself from a sanitary point of view is, in its entirety, in a condition of nuisance. With the exception of one short private drain, the whole town is without drainage. The alleys, pig pens, etc., are in a very bad condition. The odors arising from these alleys and from the back yards of many hotels and houses are simply terrible; and though they may not be dangerous to health by causing specific diseases, they certainly tend to reduce the general condition of the system to a lower standard of vitality.

The borough has no board of health; the council has no board of health within itself; no sanitary regulations or provisions have been made; no plans for the disposal of garbage have been instituted, and a general system of do as you please is carried out daily. The laity, as well as the profession, at once admits that it is dangerous; but as no serious epidemic has yet broken out in their midst, they take no steps to prevent one.

The amount of sickness has not been much, if any, above that of former years. No vital statistics are kept by the town or by the physicians, and statements vary considerably. As nearly as I can ascertain, the death rate has been, for the five months past, about three-fourths of one per cent. per month.

The condition of the borough is such that should an epidemic disease of a serious character be introduced, it would, in all probability, spread like the flames of a conflagration, and the citizens would be

"Bitter lessons sadly learning,
From the shadowy page of woe."

The borough of Clayville, which is simply a continuation of that of Punxsutawney, is in much the same condition as to sanitation.

The only water supply is from wells about sixteen feet deep.

It has a population, which is for the most part engaged in and around coal mines and numbers 1,428.

The water closets are the same style as those above described.

There is no system of drainage nor of sanitation, though the town is located much better for it, than is Punxsutawney. There has been much more sickness than usual the past summer. The diseases have been, for the most part, bowel troubles, such as dysentery, diarrhœa, cholera infantum, etc.

The suggestions I make will apply in the main to Clayville as well as Punxsutawney.

I suggest:

1st. That the present water supply be abandoned, unless it can be boiled and filtered before delivery to the people. That wells 500 feet or more be put down and cased to within 100 or 150 feet of the bottom, from which water could be obtained comparatively pure and distributed by means of reservoirs and pipes to the people. That all the people be thus supplied, and that all wells be abandoned and shut up.

2d. That the present water closet system be superseded by the Rochdale dry earth system, or by the sanitary water closet connecting with the sewer.

3d. That the town be thoroughly drained, by putting a large sewer through the main street of the borough, and by connecting smaller sewers from the side streets with it. It could be so arranged that it could be flushed from large tanks or by running the river water through it.

4th. That an intelligent and an active board of health be organized, sanitary regulations be adopted, vigorous inspection be maintained, violators of the regulations be punished and accurate vital and contagious diseases statistics be kept.

5th. That the dam be torn out and thus much dampness in soil and in cellars be prevented.

6th. That all swamps in and about the town be thoroughly drained.

7th. That these matters be urged by the State Board of Health upon the council and citizens, and that if they do not heed them, that nothing further be done at present by the State Board.

35—INSPECTION AT CHESTER, DELAWARE COUNTY, RELATIVE TO LEPROSY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

On October 31, I went to Chester, where I met Drs. Perkins and Maddox and Mr. Chas. Ross of the Chester health board. In company with these gentlemen I drove out to the almshouse at Lima, about eight miles distant, and found the leprous patient confined in the pest house, a building situated some two hundred yards away from any other buildings. He was thoroughly isolated, and no communication was allowed with him save by the daily visits of Dr. Trimble, the attending physician. In all respects he was treated as a contagious patient. I made every inquiry into his past life in order if possible to trace the origin of the disease. He is a Swede by birth, named John Anderson, age forty-one years, unmarried, has no knowledge of any living relatives, nor of any history of disease in his progenitors. He has been away from Sweden about fifteen years, has been engaged as a sailor in fruit vessels trading to the West Indies and other southern countries for fruit. For the past three years he has worked in the city of Chester. Has not had syphilis and had one slight attack of urethritis. Insists that his first symptoms were the result of exposure to the cold and wet, which was followed by an unpleasant feeling about the feet with here and there a numbness in spots. This he says was not more than two years since. He is well marked on the body and limbs with large dark spots, erythematous in appearance, on pressure becoming a yellowish white slowly resuming a deep red. These spots are but slightly nodulated, but the face by reason of the deposit between the lines or wrinkles shows the peculiar "leonine" countenance. His general health is good. I did not find any points of deadness so to speak nor any tendency at any of the articulations to shriveling. No dead white patches. Undoubtedly it is a mild case of leprosy. Fortunately the case was seen by Prof. Duhring, who takes this view. At present, he believes, although not under any special treatment, that he is better than he was some months ago. I would recommend that he be kept in the house where he is at present, but required to remain in one room to be set apart for his case. This would leave room for the admission of other contagious cases which may at any time need admission, and also facilitate the thorough disinfection of that part occupied by him after he is removed. He assures me that he has never been naturalized, but still claims allegiance to his mother country, Sweden. Under these circumstances, as there are leper colonies in Sweden, I would suggest that it may be feasible to have him returned and placed in one of these colonies.

36—INSPECTION OF LENNI AND VICINITY, DELAWARE COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

On October 27, I inspected the village of Lenni and its vicinity relative to the epidemic of diphtheria which has prevailed there for the past weeks

Through the courtesy of Dr. Morton P. Dickeson, I was enabled to make a through inspection and to determine some of the causes of the disease. At Lenni, I found a small stream running from the hills draining into Cherry spring which was the receptacle of the contents of the cesspools back of Willis'. This water crossed the road under a bridge which at the time of my visit had been used as the dumping ground of a lot of spoiled potatoes as well as the garbage of the adjoining houses. This bridge crosses the Lenni and Glen Riddle road. The drains and stream were blocked with dead leaves, etc., which detained the decaying matter thus enabling the full effects of the material to be shown upon the neighboring houses. Beyond this, I found the school house closed. This was due to the epidemic and the fear of the children carrying it to other homes. In several instances I had reason to believe this had occurred.

At Glen Riddle, at a place called Riddle's row or Bank row, I found every cesspool of some thirty families situated so as to drain directly into the mill race. In this row five cases of diphtheria had occurred with two deaths. I was informed that many of the employes of the mills here had been sick with the disease, and several claimed that they had received it from others working along side them who either had returned from an attack or from the sick bed of relatives. At McKeown's, one death had occurred, which undoubtedly was due to the overflow of the mill race which occasionally occurs, so that the water comes up to the doors of the house. This house is in the center of a bend of the stream, thus being completely exposed on three sides.

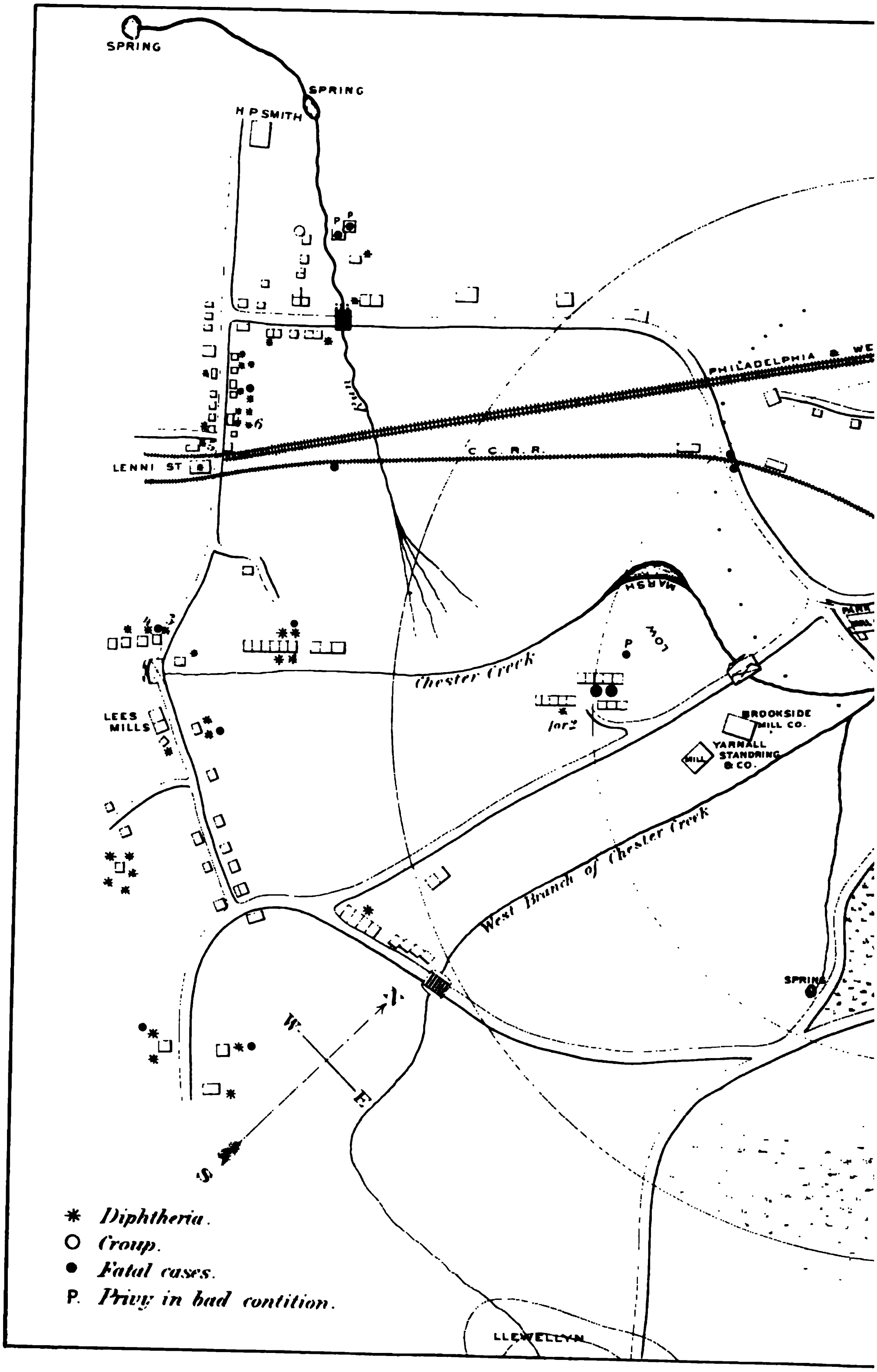
The cesspools of this house and of the neighboring houses were full, and the overflow emptied into the race. All these houses were owned by the firm of Riddles who have the mills at this place.

At Crozerville, two cases had occurred, which were the first to have the disease, then four at Rockdale, then three at Lenni and then the disease spread in every direction. The population of the affected locality is about eight hundred. I visited the villages of Parkmount, West Branch, Rockdale, Village Green also and found much to condemn in a sanitary view save the last place. Here cases had occurred which undoubtedly were due to contagion.

The origin of the epidemic was probably from the following:—one or more hogs died of cholera a few weeks back, and were thrown into the Chester creek, were shortly washed up on a flat below and allowed to remain and putrefy. The earliest cases occurred in this vicinity. Undoubtedly the polluted stream with the filth of the cesspools and garbage allowed to flow into it, was the best form of culture bed for disease germs. Although after a time the danger was recognized and one school was closed, yet the children from the affected houses were permitted to go to the other school, and thus aided in spreading the disease. Added to this was the mingling of persons from affected houses with others at the mills, and more effectually to disseminate the disease, public funerals were the rule, and on every occasion, children were brought together in the churches to view the corpses of their playmates, even to kiss them: and thus the deadly work goes on.

Dr. Dickeson has in every way urged upon the people, the importance of hygienic measures, but has not been met in the proper spirit by many. I took every occasion to distribute the pamphlets on diphtheria and funerals, and the people seemed ready to co-operate.

I would most earnestly urge that the Messrs. Riddle be directed to cleanse all the cesspools on their properties, and entirely cut off all discharges from them into the race or stream. That this be enforced in the case of all cesspools of these places. That the throwing of dead animals into the streams be announced to the people as a dangerous offense and not in future to be tolerated.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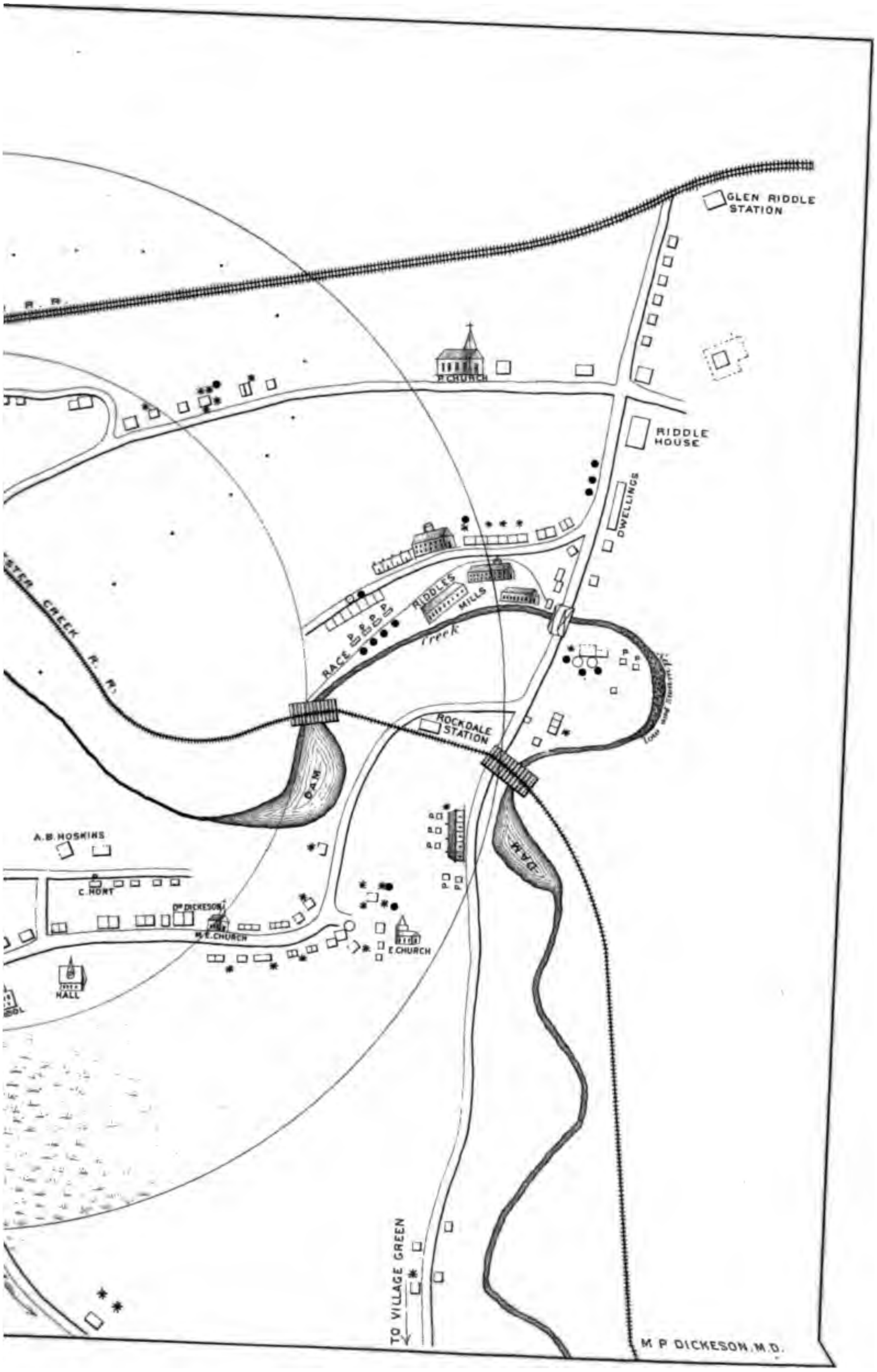
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DAM
DAM
A. B. HOSKINS
C. HUNT
Dr DICKESON
M. E. CHURCH
E. CHURCH
HALL
OOL
TO VILLAGE GREEN
M P DICKESON, M.D.

That all mill owners be required to stop the return of work people until they can exhibit a clean bill of health from their attending physician. That public funerals be prohibited most positively.

That all cesspools be required to be cemented, so as to prevent the contents from polluting the grounds or streams. I found a cesspool opposite the home of Mr. Hoskins in the most filthy condition, the overflow spreading over the surface and filling the air with the most terrible odor. This place is owned by Chas. W. Hart, Sr., of Glen Riddle. I recommend that Mr. Hart be required to thoroughly cleanse this place, dig up the polluted earth and replace it with clean, and in future prevent the excreta flowing from the well.

In connection with the mills, I cannot fail to commend the excellent condition of the houses occupied by the work people of the mills of Mr. J. B. Rhoads. The houses were in every way the most comfortable and the hygienic condition the best. They would serve as an excellent model for others.

At the mills of Messrs. Yarnall & Rhoads was a foul cesspool with the filth running in every direction over the ground; the owner very courteously promised to put it in proper order at once.

The epidemic would seem as though it were slowly dying out for want of material to attack. I am confident that a proper attention to hygiene will stamp out the disease and prevent its return. My surprise is great that there were not more cases and a larger mortality.

I enclose a map of the district, prepared by Dr. Morton P. Dickeson, showing the mills, locality of cases, deaths, location of the cesspools, etc.

APPENDIX C.

ANNUAL REPORTS OF CITIES AND TOWNS.

1. **Extracts from the Health Officer's Report, for Philadelphia for 1889, by Wm. B. Atkinson, A. M., M. D.**
2. **Report of Board of Health of Altoona.**
3. **Report of the Board of Health of Reading.**
4. **Report of Board of Health of Oil City.**
5. **Report of Mortality of Williamsport.**
6. **Extracts from the Report of the Register of Vital Statistics of Pittsburgh, for the year 1889.**

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1. CITY OF PHILADELPHIA—EXTRACTS FROM HEALTH OFFICER'S ANNUAL REPORT OF BIRTHS, MARRIAGES AND DEATHS FOR THE YEAR 1889.

By WILLIAM B. ATKINSON, M. D.

The number of births registered during the year amounted to twenty seven thousand four hundred and ninety-one (27,491), an increase of one thousand one hundred and ninety-five (1,195) over the previous year.

The number of marriages was six thousand nine hundred (6,900), an increase of two hundred (200) over the previous year.

The number of deaths was twenty thousand five hundred and thirty-six (20,536), an increase of one hundred and sixty-four (164) over the previous year.

The following table shows the ratio of deaths, with population, for the past twenty-nine years:

YEARS.	Population.	Deaths.	Deaths to 1,000 persons living.	Persons living to one death.
1861,	576,408	13,540	23.49	42.57
1862,	587,287	13,864	23.60	42.36
1863,	598,166	14,220	23.73	42.06
1864,	608,045	15,875	26.10	38.30
1865,	618,924	15,633	25.25	39.59
1866,	620,803	15,362	22.80	40.99
1867,	640,682	12,660	19.76	50.60
1868,	651,561	13,391	20.39	48.65
1869,	662,440	13,428	20.27	49.33
1870,	*674,022	15,317	22.72	44.00
1871,	700,000	15,485	22.12	45.20
1872,	725,000	18,987	26.19	38.18
1873,	750,000	15,224	20.29	49.26
1874,	775,000	15,238	19.66	50.86
1875,	800,000	17,805	22.25	44.92
1876,	825,594	18,892	22.88	43.69
1877,	850,856	16,004	18.81	53.16
1878,	876,118	15,743	17.97	55.65
1879,	901,380	15,473	17.17	58.25
1880,	*846,980	17,711	20.91	47.82
1881,	868,000	19,515	22.48	44.47
1882,	886,539	20,059	22.62	44.19
1883,	907,041	20,076	22.13	45.18
1884,	927,995	19,999	21.55	46.40
1885,	949,432	21,392	22.53	44.38
1886,	971,363	20,005	20.59	48.55
1887,	993,801	21,719	21.85	45.75
1888,	1,016,758	20,372	20.04	49.90
1889,	1,040,245	20,536	19.74	50.65

* U. S. census—the intervening years population estimated.

The following comparative table will show the mean temperature of the summer months for the past fourteen years:

MONTHS.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
June,	42.2°	71.7°	67.9°	71.7°	73.8°	67.1°	72.9°	73.7°	70.5°	70.6°	68.6°	70.9°	72.6°	71.4°
July,	78.6°	77.8°	77.3°	75.6°	75.6°	75.5°	77.4°	76.1°	71.8°	77.2°	74.6°	79.7°	72.1°	75.3°
August,	74.3°	75.5°	73.4°	72.7°	72.8°	75.0°	73.9°	71.9°	72.5°	71.8°	73.2°	73.0°	73.6°	72.8°
September,	63.8°	68.8°	7.9°	64.4°	67.7°	74.8°	69.1°	64.5°	70.6°	65.2°	69.2°	64.0°	63.6°	66.4°
Mean,	72.72°	72.95°	71 62°	71.10°	72.47°	73.10°	73.32°	71.5°	71.3°	71.2°	71.4°	71.9°	70.5°	71.5°

The number of deaths from diphtheria amounted to three hundred and seventy-five (375), showing an increase of twenty-five (25) over the previous year. The deaths from scarlet fever amounted to two hundred and ninety-eight (298), an increase of sixty-three (63) over the previous year.

	Diphtheria.	Scarlet fever.
First quarter,	100	127
Second quarter,	85	67
Third quarter,	62	41
Fourth quarter,	128	63
Total,	375	298

The following comparative table shows the number of deaths from each disease for the past twenty-two years:

YEARS.	Diphtheria.	Scarlet fever.
1868,	119	224
1869,	182	799
1870,	172	956
1871,	145	262
1872,	150	174
1873,	110	319
1874,	179	461
1875,	652	1,032
1876,	708	328
1877,	458	379
1878,	464	554
1879,	321	836
1880,	323	291
1881,	457	486
1882,	933	310
1883,	1,006	561
1884,	680	540
1885,	600	375
1886,	411	248
1887,	416	159
1888,	350	235
1889,	375	298

BIRTHS.

The number of births during the year amounted to twenty-seven thousand four hundred and ninety-one (27,491), an increase of one thousand one hundred and ninety-five (1,195); the ratio of births to population being 26.43 per thousand, or 1 in each 37.8 persons.

The number of male children amounted to fourteen thousand four hundred and thirty (14,430), and of females to thirteen thousand and sixty-one (13,061).

The number of illegitimate births reported amounted to eight hundred and fourteen (814).

1889.	Total.	BIRTHS.		BLACK.		STILLBORN.		Twins.	Triplets.	Illegitimate.
		M.	F.	M.	F.	M.	F.			
January,	2,291	1,174	1,117	35	39	57	61	25	.	62
February,	2,128	1,114	1,014	34	40	42	46	23	.	69
March,	2,229	1,189	1,040	47	36	58	30	26	. .	55
April,	2,046	1,127	919	36	32	49	30	31	.	64
May,	2,089	1,081	1,008	39	32	64	48	31	3	62
June,	2,207	1,182	1,025	47	39	42	38	28	.	68
July,	2,457	1,289	1,168	46	42	72	43	30	1	71
August,	2,458	1,281	1,177	32	30	45	36	34	. .	78
September,	2,467	1,251	1,216	43	36	45	36	31	. .	76
October,	2,434	1,285	1,149	34	32	67	51	27	1	77
November,	2,224	1,160	1,064	44	31	43	57	31	. .	66
December,	2,461	1,297	1,164	32	34	47	40	32	1	66
Totals,	27,491	14,430	13,061	469	423	631	516	349	6	814

The number of births in each quarter of the year was as follows:

First quarter, ending March 31, 1889,	6,648
Second quarter, ending June 30, 1889,	6,342
Third quarter, ending September 30, 1889,	7,382
Fourth quarter, ending December 31, 1889,	7,119
	27,491

The following table presents the births in each ward during the year 1889:

First,	1,543	Thirteenth,	486	Twenty-fifth,	1,110
Second,	796	Fourteenth,	431	Twenty-sixth,	1,490
Third,	772	Fifteenth,	1,346	Twenty-seventh,	907
Fourth,	701	Sixteenth,	459	Twenty-eighth,	1,173
Fifth,	396	Seventeenth,	656	Twenty-ninth,	1,490
Sixth,	224	Eighteenth,	785	Thirtieth,	814
Seventh,	664	Nineteenth,	1,708	Thirty-first,	973
Eighth,	332	Twentieth,	1,174	Thirty-second,	680
Ninth,	209	Twenty-first,	723	Thirty-third,	728
Tenth,	590	Twenty-second,	943	Unknown,	240
Eleventh,	401	Twenty-third,	686		
Twelfth,	357	Twenty-fourth,	1,504	Total,	27,491

MARRIAGES.

The number of marriages registered during the year was six thousand nine hundred (6,900), or about one person married in 75.38—an increase of two hundred (200) over the previous year.

First quarter, ending March 31, 1889,	1,646
Second quarter, ending June 30, 1889,	1,833
Third quarter, ending September 30, 1889,	1,421
Fourth quarter, ending December 31, 1889,	2,000
	6,900

The following table gives the birth place of those married:

NATIVITIES.	BIRTHPLACE OF BRIDES.			Total of grooms.
	United States.	Foreign.	Not given.	
Birthplace of grooms—				
United States,	3,497	383	22	3,912
Foreign,	688	2,083	8	2,779
Not given,	33	9	167	209
Total of brides,	4,218	2,485	197	6,900

The number of marriages in which both parties were natives of the United States was three thousand four hundred and ninety-seven (3,497); those in which both parties were foreign born amounted to two thousand and eighty-three (2,083): in one hundred and sixty-seven (167) cases the nativities of both parties were not given.

The number of men, natives of the United States, married during the year was three thousand nine hundred and twelve (3,912); the number of women natives of the United States was four thousand two hundred and eighteen (4,218) ; the birth place of two hundred and nine (209) men, and one hundred and ninety-seven (197) women, were not given.

The number of foreign men married was two thousand seven hundred and seventy-nine (2,779) ; of women, two thousand four hundred and eighty-five (4,285)—three hundred and ninety-three of whom married natives of the United States; six hundred and eighty-eight (688) native women married foreigners.

The following table gives the ages of the parties married during the year 1889:

Age of the Parties.

1889.	Ages of the Women.									Total of men.
	Under 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Not given.	
Ages of the men—										
Under 20,	46	2	...	...	...	...	...	...	...	48
20 to 25,	427	1,470	185	21	1	...	...	...	13	2,117
25 to 30,	175	1,357	817	97	4	1	...	...	21	2,485
30 to 40,	46	402	543	407	19	2	...	...	16	1,432
40 to 50,	1	37	66	152	65	6	...	...	3	330
50 to 60,	...	3	10	37	42	21	1	...	1	115
60 to 70,	...	...	2	10	18	10	5	...	2	47
70 to 80,	...	...	...	3	1	3	1	...	...	8
Not given,	...	4	2	2			...	...	310	318
Total of women,	695	3,275	1,635	729	150	43	7	.	366	6,900

The following table gives the ages of those married under twenty years of age:

Women under 20.

Under 20.	14.	15.	16.	17.	18.	19.	20 to 25.	Total.
Men under 20—								
18,	...	1	1	...	1	.	1	4
19,	1	1	1	2	5	5	1	16
20,	1	1		8	8	10	...	26
20 to 25,	1	5	11	45	146	212	...	427
25 to 30,	...	4	11	24	56	80	...	175
30 to 40,	...	1	4	6	13	22	...	46
40 to 50,	...	...	...			1		1
Total,	3	13	35	85	229	330	2	697

Four (4) men were married at eighteen years and three (3) females at fourteen years.

The following table will show the member of each sex in each division of age married during the year.

1889.	Under 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Age not given.
Males,	48	2,117	2,482	1,435	330	115	47	8	318
Females,	695	3,275	1,635	729	150	43	7	. .	366
Total,	743	5,392	4,117	2,164	480	158	54	8	684

MORTALITY.

The number of deaths during the year:

White,	19,405
Colored,	1,131
Total,	20,536
Males,	10,501
Females,	10,035
Total,	20,536
Male adults,	5,559
Female adults,	5,642
Total,	11,201
Male minors,	4,942
Female minors,	4,393
Total,	9,335

Actual deaths in the city:

Deaths from specific diseases,	19,197
Deaths from old age,	850
Deaths from violence (accident), homicide and suicide,	488
Deaths from unknown causes,	1
Total,	20,536

In the above figures the still-born and premature births and bodies brought to the city are not included, thus showing the actual mortality.

The mortality of adults amounted to eleven thousand two hundred and one (11,201), showing a decrease of four hundred (400) from the previous year; the mortality of minors amounted to nine thousand three hundred and thirty-five (9,335), an increase of five hundred and sixty-four (564) from the previous year.

The number of deaths of native born persons was fifteen thousand two hundred and eighty-three (15,283); of foreign-born, four thousand five hundred and six (4,506), while there were seven hundred and forty-seven (747) whose nationality was unknown.

Abscess.—The number of deaths amounted to ninety-four (94), a decrease of sixteen (16) from the previous year.

Cancer. The number of deaths so reported amounted to five hundred and thirty-one (531), an increase of eighty-three (83) over the previous year.

Cerebro-spinal Meningitis.—The number of deaths from this cause amounted to thirty-seven (37), a decrease of thirteen (13) from the previous year.

Consumption of the Lungs.—The deaths from this cause amounted to two thousand five hundred and thirty-two (2,532), a decrease of one hundred and sixty-three (163) from the previous year. Of these two thousand two hundred and thirty-eight (2,238) were adults, and two hundred and ninety-four (294) were minors. One thousand six hundred and eighty-five (1,685) were natives of the United States; six hundred and eighty-nine (689) were foreign-born, and there were one hundred and fifty-eight (158) whose nationality was not known.

The deaths in each month of the year from this cause were as follows:

January,	249	July,	214
February,	210	August,	175
March,	214	September,	180
April,	218	October,	241
May,	276	November,	182
June,	178	December,	193

The largest number of deaths occurred in the month of May, two hundred and seventy-six (276), and the smallest number in the month of August, one hundred and seventy-five (175).

The average deaths from this disease in each month,	211.0
The average deaths from this disease in each week,	48.7
The average deaths from this disease in each day,	6.93

The number of deaths from consumption, of both sexes, for the past twenty-eight years were as follows:

YEARS.	Males.	Females.	Total.
1862,	961	988	1,949
1863,	966	989	1,955
1864,	1,087	1,002	2,089
1865,	1,020	1,006	2,026
1866,	994	950	1,944
1867,	942	1,005	1,947
1868,	1,000	995	1,995
1869,	982	993	1,975
1870,	1,118	1,190	2,308
1871,	1,099	1,138	2,237
1872,	1,167	1,163	2,330
1873,	1,093	1,198	2,291
1874,	1,133	1,171	2,304
1875,	1,185	1,174	2,359
1876,	1,288	1,388	2,676
1877,	1,142	1,207	2,349

YEARS.	Males.	Females.	Total.
1878,	1,154	1,337	2,491
1879,	1,238	1,248	2,481
1880,	1,325	1,367	2,692
1881,	1,358	1,410	2.768
1882,	1,382	1,427	2,809
1883,	1,343	1,455	2,798
1884,	1,395	1,406	2,801
1885,	1,346	1,475	2,821
1886,	1,468	1,366	2,834
1887,	1.437	1,363	2,800
1888,	1,404	1,291	2,695
1889,	1,297	1,235	2,532

Cholera Infantum.—The number of deaths so reported amounted to eight hundred and thirty-eight (838), an increase of three (3) over the previous year.

Diphtheria.—The number of deaths from this cause amounted to three hundred and seventy-five (375), an increase of twenty-five (25) over the previous year.

The following are its statistics for 22 years:

YEARS.	Male adults.	Female adults.	Male children	Female children.	DEATHS IN EACH QUARTER.				
					1st.	2d.	3d.	4th.	Total.
1868,	2	3	51	63	26	24	17	52	119
1869,	3	5	75	99	42	48	37	55	182
1870,	4	4	68	96	33	25	31	83	172
1871,	3	3	71	68	48	32	29	36	145
1872,	5	5	61	79	52	28	25	45	150
1873,	1	2	56	51	45	25	17	23	110
1874,	1	4	80	94	30	28	20	101	179
1875,	6	7	314	325	116	158	142	236	652
1876,	10	8	330	360	219	192	103	194	708
1877,	6	7	182	263	120	97	84	157	458
1878,	6	11	218	229	135	81	90	158	464
1879,	6	5	141	169	130	57	46	88	321
1880,	3	6	151	163	99	72	51	101	326
1881,	3	8	214	232	84	83	100	190	457
1882,	5	8	442	478	187	162	203	381	933
1883,	1	9	511	485	367	118	230	391	1,206
1884,	5	6	330	339	196	112	114	258	680
1885,	3	10	282	305	204	120	111	165	600
1886,	6	4	159	242	136	84	91	100	411
1887,	5	5	192	214	67	88	94	167	416
1888,	6	8	166	170	108	72	52	118	350
1889,	3	3	199	170	100	85	62	128	375

Scarlet Fever.—The number of deaths from this cause amounted to two hundred and ninety-eight (298), an increase of sixty-three (63) over the previous year.

The deaths in each month of the year were as follows:

January,	55	July,	12
February,	35	August,	12
March,	37	September,	17
April,	17	October,	20
May,	31	November,	24
June,	19	December,	19

Typhoid Fever.— The number of deaths from this cause amounted to seven hundred and thirty-six (736), a decrease of forty-nine (49) from the previous year.

Hydrophobia. The following table shows the death from this cause since 1860:

1860,	-	1875,	2
1861,	1	1876,	4
1862,	4	1877,	4
1863,	6	1878,	2
1864,	3	1879,	3
1865,	2	1880,	1
1866,	2	1881,	5
1867,	2	1882,	2
1868,	-	1883,	3
1869,	7	1884,	-
1870,	1	1885,	-
1871,	1	1886,	-
1872,	1	1887,	-
1873,	1	1888,	-
1874,	3	1889,	3

Inflammation of Lungs.—The total number of deaths from this cause amounted to one thousand five hundred and eighty-two (1,582), a decrease of five (5) during the year.

Old Age.—The number of deaths so reported amounted to eight hundred and fifty (850).

Poisoning.—The number of deaths amounted to twenty-seven (27) an increase over the previous year of twelve (12), as follows:

Poisoning,	1	Lye,	1
Alcohol,	1	Narcotic,	3
Arsenic,	5	Opium,	3
Chloral,	2	Paregoric,	1
Laudanum,	3	Phosphorus,	1
Lead,	5	Strychnine,	1

Suicide.—The number of deaths from this cause amounted to one hundred and four (104), an increase of ten (10) over the previous year; of these one hundred and one (101) were adults, and three (3) were minors; eighty-seven (87) were males and seventeen (17) females; the youngest being three (3) between fifteen and twenty years of age, classified as follows:

Arsenic,	5	Jumping from window,	3
Burns,	1	Laudanum,	7
Carbolic acid.	2	Morphia,	1
Chloral,	2	Opium,	1
Coal gas,	1	Paris green,	2
Corrosive sublimate,	1	Poison,	6
Cutting throat,	7	Rough on Rats,	2
Drowning,	3	Run over on railroad,	1
Hanging,	33	Shooting,	26

Small-pox.—There were no deaths from this cause during the year and but three (3) cases.

Sun Stroke.—The number of deaths so reported amounted to six (6), a decrease of thirty-one (31) from the previous year.

Tumors.—The number of deaths amounted to eighty-four (84), a decrease of six (6) from the previous year.

Tumor of bowels,	1	Tumor of neck,	5
" brain,	20	" omentum,	1
" breast,	1	" stomach,	1
" jaw,	1	" uterus,	9
" leg,	1	" abdominal,	11
" liver,	3	" multiple,	1
" lung,	1	" ovarian,	28

The following table shows the percentage of deaths (to total mortality) during specific periods of life, compared with a similar statement of the mortality in the year 1888 (still-births not included:

	1888.			1889.		
Under 1 year,	4,977	Being 24.45	per cent.	5,268	Being 25.66	per cent.
1 to 2,	1,191	" 5.84	"	1,287	" 6.27	"
2 to 5,	1,100	" 5.39	"	1,197	" 5.83	"
5 to 10,	562	" 2.75	"	663	" 3.23	"
10 to 15,	362	" 1.77	"	307	" 1.49	"
15 to 20,	579	" 2.84	"	613	" 2.99	"
20 to 30,	2,103	" 10.32	"	1,927	" 9.38	"
30 to 40,	1,935	" 9.54	"	1,824	" 8.88	"
40 to 50,	1,763	" 8.65	"	1,673	" 8.15	"
50 to 60,	1,616	" 7.93	"	1,561	" 7.60	"
60 to 70,	1,789	" 8.78	"	1,786	" 8.69	"
70 to 80,	1,512	" 7.42	"	1,491	" 7.26	"
80 to 90,	750	" 3.62	"	817	" 3.98	"
90 to 100,	121	" .59	"	116	" .56	"
100 to 110,	12	" .05	"	6	" .03	"

The number of children dying under ten (10) years of age amounted to eight thousand four hundred and fifteen (8,415), or 40.97 per cent. of the total mortality.

Adults and Minors.

(Premature births and still-born excluded.)

1889. MONTHS.	Males.	Females.	Adults.	Minors.	Total.
January,	963	899	1,136	726	1,862
February,	793	804	951	646	1,597
March,	816	825	984	657	1,641
April,	847	764	911	700	1,611
May,	997	954	1,109	842	1,951
June,	855	819	794	880	1,674
July,	1,236	1,242	1,011	1,467	2,478
August,	869	848	802	915	1,717
September,	735	649	751	633	1,384
October,	888	829	1,043	674	1,717
November,	719	697	844	572	1,416
December,	783	705	865	623	1,488
Total,	10,501	10,035	11,201	9,335	20,536

Excess of males over females,	466
Excess of adults over minors,	1,866

The largest mortality occurred in the month of July, two thousand four hundred and seventy-eight (2,478), and the least in the month of September, one thousand three hundred and eighty-four (1,384).

Births, Marriages and Deaths for each month in the year 1889.

1889. MONTHS.	Births.	Marriages.	Deaths.
January,	2,291	659	1,862
February,	2,128	549	1,597
March,	2,229	438	1,641
April,	2,046	658	1,611
May,	2,089	515	1,951
June,	2,207	660	1,674
July,	2,454	399	2,478
August,	2,458	439	1,717
September,	2,467	583	1,384
October,	2,434	783	1,717
November,	2,224	694	1,416
December,	2,461	523	1,488
Totals,	27,491	6,900	*20,536

* Premature and still-born not included.

Marriages per each 1,000 of population,	13.26
Births " " "	26.42
Deaths " " "	19.74

The population (as per U. S. census) at each decade was as follows, with percentage of deaths to each 1,000 of population:

YEARS.	Population.	Deaths.	Deaths in 1,000.
1800,*	. . . . . .	. . . .	. . . . . .
1810, ...	110,210	1,897	†17.21
1820, ...	137,097	3,189	23.26
1830, ...	188,797	3,948	20.90
1840, ...	258,037	4,593	17.78
1850, ...	408,762	8,034	19.63
1860, ...	565,529	10,849	19.18
1870, ...	674,022	15,317	22.72
1880, ...	846,980	17,711	20.91

* No record of deaths published.

† Still-born and bodies brought from country excluded.

Recapitulation for the past twenty-nine years and six months.

YEARS.	Births.	Marriages.	Deaths.
1860 (six months), ...	8,434	2,310	6,342
1861, ...	17,271	4,417	14,468
1862, ...	14,741	4,652	15,097
1863, ...	15,298	5,474	15,788
1864, ...	15,591	6,752	17,582
1865, ...	15,428	6,864	17,169
1866, ...	17,437	7,087	16,803
1867, ...	17,007	6,084	13,933
1868, ...	17,259	6,371	14,693
1869, ...	16,960	6,382	14,786
1870, ...	17,194	6,421	16,750
1871, ...	18,346	6,806	16,993
1872, ...	20,072	6,496	20,544
1873, ...	18,702	7,891	16,736
1874, ...	19,387	6,639	16,315
1875, ...	17,933	6,144	18,909
1876, ...	18,695	5,341	18,892
1877, ...	18,279	6,147	16,004
1878, ...	18,346	6,247	15,743
1879, ...	18,449	5,224	15,473
1880, ...	19,388	6,476	17,711
1881, ...	18,154	7,560	19,515
1882, ...	20,098	8,521	20,059
1883, ...	21,237	8,231	20,076
1884, ...	22,160	8,637	19,999
1885, ...	22,656	7,676	21,392
1886, ...	23,221	6,215	20,005
1887, ...	24,113	6,355	21,719
1888, ...	26,296	6,700	20,372
1889, ...	27,491	6,900	20,536
Totals, ...	565,638	193,039	520,404

2. REPORT OF BOARD OF HEALTH OF ALTOONA.

The following are the members of the board of health: Dr. J. W. Allen, Dr. C. B. Dudley, Mr. W. T. Miller and Dr. A. S. Smith, and his Honor, Mayor E. H. Turner, who is president *ex-officio*.

Adults and Minors.

(Premature births and still-born excluded.)

1889. MONTHS.	Males.	Females.	Adults.	Minors.	Total.
January,	963	899	1,136	726	1,862
February,	793	804	951	646	1,597
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June,	855	819	794	880	1,674
July,	1,236	1,242	1,011	1,467	2,478
August,	869	848	802	915	1,717
September,	735	649	751	633	1,384
October,	888	829	1,043	674	1,717
November,	719	697	844	572	1,416
December,	783	705	865	623	1,488
Total,	10,501	10,035	11,201	9,335	20,536

Excess of males over females,	466
Excess of adults over minors,	1,866

The largest mortality occurred in the month of July, two thousand four hundred and seventy-eight (2,478), and the least in the month of September, one thousand three hundred and eighty-four (1,384).

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1889. MONTHS.	Births.	Marriages.	Deaths.
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May,	2,089	515	1,951
June,	2,207	660	1,674
July,	2,454	399	2,478
August,	2,458	439	1,717
September,	2,467	563	1,384
October,	2,434	783	1,717
November,	2,224	694	1,416
December,	2,461	523	1,488
Totals,	27,491	6,900	*20,536

* Premature and still-born not included.

Marriages per each 1,000 of population,	13.26
Births " " "	26.42
Deaths " " "	19.74

The population (as per U. S. census) at each decade was as follows, with percentage of deaths to each 1,000 of population:

YEARS.	Population.	Deaths.	Deaths in 1,000.
1800,*	. . . . . .	. . . .	. . . . . .
1810,	110,210	1,897	†17.21
1820,	137,097	3,189	23.26
1830,	188,797	3,948	20.90
1840,	258,037	4,593	17.78
1850,	408,762	8,034	19.63
1860,	565,529	10,849	19.18
1870,	674,022	15,317	22.72
1880,	846,980	17,711	20.91

* No record of deaths published.

† Still-born and bodies brought from country excluded.

Recapitulation for the past twenty-nine years and six months.

YEARS.	Births.	Marriages.	Deaths.
1860 (six months),	8,434	2,310	6,342
1861,	17,271	4,417	14,468
1862,	14,741	4,652	15,097
1863,	15,293	5,474	15,788
1864,	15,591	6,752	17,582
1865,	15,428	6,864	17,169
1866,	17,437	7,087	16,803
1867,	17,007	6,084	13,933
1868,	17,259	6,371	14,693
1869,	16,960	6,382	14,786
1870,	17,194	6,421	16,750
1871,	18,346	6,806	16,998
1872,	20,072	6,496	20,544
1873,	18,702	7,891	16,736
1874,	19,387	6,639	16,315
1875,	17,933	6,144	18,909
1876,	18,695	5,341	18,892
1877,	18,279	6,147	16,004
1878,	18,346	6,247	15,743
1879,	18,449	5,224	15,473
1880,	19,388	6,476	17,711
1881,	18,154	7,560	19,515
1882,	20,098	8,521	20,059
1883,	21,237	8,231	20,076
1884,	22,160	8,637	19,999
1885,	22,656	7,676	21,392
1886,	23,221	6,215	20,005
1887,	24,113	6,355	21,719
1888,	26,296	6,700	20,372
1889,	27,491	6,900	20,536
Totals,	565,638	193,039	520,404

2. REPORT OF BOARD OF HEALTH OF ALTOONA.

[illegible] following are the members of the board of health: Dr. J. W. Dudley, Mr. W. T. Miller and Dr. A. S. Smith, and [illegible]. H. Turner, who is president *ex-officio.*

The following is a statement of the amount of money appropriated, and the amount for which warrants were drawn covering the expenses of the year:

	Appropriated.	Warrants drawn.
Salary of secretary,	$300 00	$300 00
Salary of health officer,	600 00	685 00
Disinfectants, etc.,	150 00	43 50
Vaccination, etc.,	75 00	14 50
Printing and stationery,	50 00	33 75
Total,	$1,175 00	$1,076 75

Appropriated,		$1,175 00
Amount appropriated and not used,	$98 25	
Amount paid into the city treasury received for privy cleaning permits and licenses,	252 00	
Amount collected as fines for violation of rules upon arrests made by the health officer, as reported by him,	13 00	363 25
Considering the credits, it cost to maintain the department during the year,		$811 75

The statistics of deaths and burials, marriages and births are given in the following tabulated statement, which is made up from reports furnished by the various physicians, undertakers, clergymen, midwives, sextons and magistrates of the city, as required by law:

NUMBER OF DEATHS.

Deaths in the city,	564
Still-born,	24
Total,	588

SEX AND COLOR.

White males,	293	Sex not stated,	2
White females,	280		
Colored males,	4	Total,	588
Colored females,	9		

SOCIAL CONDITION.

Married,	148	Not stated,	7
Single,	405		
Widows,	19	Total,	588
Widowers,	9		

NATIVITIES.

United States,	489	Italy,	1
England,	6	Arabia,	1
Germany,	21	Not stated,	44
Ireland,	23		
Scotland,	1	Total,	588
Prussia,	1		
Russia,	1		

AGES.

Under one year,	200
1 to 5 years,	92
5 to 10 years,	37
10 to 20 years,	29
20 to 40 years,	97
40 to 60 years,	52
Over 60 years,	69
Age not stated,	12
Total,	588

CAUSES OF DEATH.

Abcess, cerebral,	2
Accidents,	2
crushed breast,	1
railroad,	18
strangulation,	1
poisoning,	1
burns,	1
Anaemia,	2
Angina, malignant,	2
Apoplexy,	4
Asphyxia,	4
Asthenia,	1
Asthma,	1
Bowels, intussusception of,	2
hemorrhage of,	1
strangulation of,	1
tuberculosis of,	1
obstruction of,	1
inflammation of,	2
Brain, inflammation of,	1
water on,	1
concussion of,	1
congestion of,	8
disease of,	2
paralysis of,	1
softening of,	2
Bright's disease,	8
Bronchitis,	5
Capillary,	2
Cancer,	3
of uterus,	1
of breast,	2
of stomach,	1
of womb,	1
of liver,	1
Catarrh,	1
gastro-intestinal,	2
frontal,	1
Cerebritis, typhoid,	1
Cerebral congestion,	2
Child birth,	1
Cholera infantum,	43
Cholera morbus,	1
Cirrhosis hepatis,	1
Complication of diseases,	1
Consumption,	35
Convulsions,	22
uraemic,	1
puerperal,	1
Croup, laryngeal,	1
membranous,	16
diphtheritic,	8
Croupal trouble,	1
Cyanosis,	1
Cystitis,	1
Debility, general,	5
Decay, senile,	2
Dentition,	2
Diabetes mellitus,	1
Diathesis, hemorrhagic,	1
Diphtheria,	24
laryngeal,	2
croupal,	1
Dropsy,	4
cardiac,	2
Dysentery,	2
Effusion, dropsical,	1
Effusion at base of brain,	2
Enteritis,	1
Erysipelas,	1
Exhaustion,	1
Fever, scarlet,	1
typhoid,	13
typhus,	1
intermittent,	1
typho-malarial,	3
puerperal,	2
malarial and dilatation of heart,	1
Fracture of odontoid process of cervical vertebra,	1
Gangrene,	2
Gastritis,	1
Gastro-enteritis,	2
Glottis, oedema of,	1
Heart, deficiency of,	1
fatty degeneration of,	1
hypertrophy of,	2
neuralgia of,	1
failure of,	6

Heart disease of,	6
paralysis of,	2
Heart disorder,	1
Heart trouble,	1
Heart clot,	1
Hemiplegia,	1
Hemorrhage,	2
intestinal,	1
typhoid intestinal,	1
cerebral,	3
internal,	2
Hepatitis,	2
Hydrocephalus,	1
Hydro-pericardium,	1
Inanition,	9
Indigestion,	1
Inflammation and septicaemia,	1
Inflammation of brain and spinal cord, with pneumonia,	1
Innutrition,	2
Jaundice,	1
infantile,	1
Kidneys, disease of,	1
inflammation of,	1
Leukemia,	1
Liver, enlargement of,	1
Liver complaint,	1
Liver and kidneys, disease of,	2
Locomotor ataxia,	1
Lungs, congestion of,	9
abscess of,	2
inflammation of,	1
hemorrhage of,	2
Mal-nutrition,	1
Marasmus,	12
Maternity, trouble following,	1
Measles,	3
Meningitis,	12
cerebral,	2
tubercular,	3
spinal,	2
Metro-peritonitis,	1
Morbus brighti,	1
Natural,	1
Nephritis,	2
Old age,	10
Paralysis,	6
Paralysis from cerebral hemorrhage,	1
Parenchymatous-metritis,	1
Paresis,	1
Perforation, intestinal from ulceration,	1
Pericarditis, rheumatic,	1
Peritonitis,	7
Puerperal,	3
peritonitis,	1
Pneumonia,	36
intermitting,	1
catarrhal,	7
typhoid,	3
hypostatic,	1
broncho,	1
Pneumonia and paralysis following diphtheria,	1
Premature births,	16
Prostate, enlarged and catarrh of bladder,	1
Pyaemia,	1
Rachitis,	1
Rectum, carcinoma of,	1
Rheumatism,	1
typhoid,	1
Scarlatina,	2
Scarlet rash,	1
Scrofulous disease,	2
Senility,	1
Septicaemia,	1
Skull, fracture of,	2
Spasms,	6
Spine, concussion of,	1
Potts' disease of,	1
scrofulous abcess of,	1
Still-born,	24
Stomach, hemorrhage of,	1
ulcer of,	1
Stomach and bowels, typhoid inflammation of,	1
Suffocation,	2
Strangulated hernia,	1
Tabes mesenterica,	1
Throat, malignant sore,	1
Thrush and general debility,	1
Tuberculosis,	2
scrofulous,	1
milliary,	1
pulmonary,	1
Tumor, malignant and gastritis,	1
Not stated,	12

MARRIAGES.

Marriages,	62

BIRTHS.

White males,	415
White females,	325
Colored males,	2
Colored females,	1
Sex not stated,	11
Total,	751

Death rate per 1,000, 19.6 at an estimated population of 30,000.

The board still has some difficulty in collecting the foregoing statistics, and the statement may not, therefore, give all of the marriages, births and deaths occurring within the city during the year, but the number of deaths, which is the most important record, may be regarded as fairly correct.

The death rate per thousand at an estimated population of 30,000 was 16.133 per thousand for the year 1888, as reported in the fourth annual report.

It will be observed. therefore, that the death rate per thousand, at the same estimated population, for the year 1889 shows an increase of 3.467 over the year 1888.

This may be due partly to the fact that reports have been furnished of all, or nearly all, the deaths occurring in 1889, while for the year 1888 complete reports were not furnished, and due partly to general unhealthfulness during the year, which has existed throughout the entire country.

The following is a statement giving, by months, the number of the different contagious diseases which occurred during the year, as reported by the various practicing physicians in the city:

January,	Diphtheria.	13	
January,	Scarlet fever,	7	
January,	Typhoid fever,	3	
			23
February,	Diphtheria,	1	
February,	Scarlet fever,	3	
			4
March,	Diphtheria,	9	
March,	Scarlet fever,	7	
March,	Typhoid fever,	2	
			18
April,	Diphtheria,	2	
April,	Scarlet fever,	2	
			4
May,	Diphtheria,	6	
May,	Scarlet fever,	5	
			11
June,	Diphtheria.	4	
June,	Scarlet fever,	6	
June,	Typhoid fever,	1	
			11
July,	Diphtheria.	3	
July,	Scarlet fever,	5	
July,	Typhoid fever,	2	
			10
August,	Diphtheria,	4	
August,	Scarlet fever,	15	
August,	Typhoid fever,	31	
			50

September,	Diphtheria,	17	
September,	Scarlet fever,	11	
September,	Typhoid fever,	20	
September,	Typhus,	1	
			49
October,	Diphtheria,	12	
October,	Scarlet fever,	9	
October,	Typhoid fever,	10	
			31
November,	Diphtheria,	12	
November,	Scarlet fever,	10	
November,	Typhoid fever,	8	
			30
December,	Diphtheria,	8	
December,	Scarlet fever,	7	
			15
Total,			256

Reports on all of the above cases received prompt action by the president and health officer, the health officer making an inspection of the premises where many of the diseases occurred and taking all necessary precautions to prevent the spread of any disease.

3. REPORT OF THE BOARD OF HEALTH OF THE CITY OF READING, PA.

M. A. Rhoads, M. D., *President*; Martin Luther, M. D., Wm. F. Marks, M. D., D. P. Schlott, Thomas P. Merritt, A. B. Dundor, M. D., C. H. Schaeffer, Esq., E. A. Howell, *Secretary*; R. J. Laing, *Health Commissioner*.

MARRIAGES.

Six hundred and eighty-six marriages were solemnized during the year 1889, an increase of sixty-four as compared with last year.

Fifty-three of the marriages took place in January, forty-six in February, fifty nine in March, forty-seven in April, fifty two in May, sixty-eight in June, twenty-nine in July, fifty-five in August, forty-five in September, seventy-eight in October, seventy-seven in November and seventy-six in December.

Nationality of Grooms and Brides.

	Quarter ending March 31, 1889.		Quarter ending June 30, 1889.		Quarter ending September 30, 1889.		Quarter ending December 31, 1889.		Total.	
	Groom	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.	Grooms.	Brides.
City, ...	38	55	40	60	40	44	67	93	185	252
County, ...	64	71	69	69	61	55	97	79	294	274
State, ...	33	20	33	25	12	18	37	28	115	91
United States, . . .	4	1	9	4	3	2	13	7	29	14
Foreign, ...	15	9	14	8	13	10	18	17	60	44
Not given, ...	1	2	2	1	. . .		. . .	8	3	11
Total, . .	158	158	167	167	129	129	232	232	686	686

Table Showing the Ages of the Parties at the Time of Marriage.

AGES OF GROOMS.	AGES OF BRIDES.								
	Under 20 years.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	Not given.	Total.
Under 20 years, ...	28	7		.	. . .	. . .	. . .	. . .	35
20 to 25 years, ...	126	224	14	. . .	. . .	. . .	. . .	. . .	364
25 to 30 years, ...	23	94	40	7	. . .	. .	.	. . .	164
30 to 40 years, ...	6	25	28	23	. . .	1	. . .	. . .	83
40 to 50 years, ...	1	5	8	9	3	. . .	. . .	. . .	26
50 to 60 years, ...	. . .	. . .	1	1	4	5	1	. . .	12
60 to 70 years, ...	. . .	.	. .	1	. .	.	. . .	. .	1
Not given, ...	. . .	.	.	1		. . .			1
Total women, . . .	184	355	91	42	7	6	1	. . .	686

BIRTHS.

Fifteen hundred and eighty-six births were reported during the year, a decrease of forty-two as compared with the year 1888. Eight hundred and fourteen were males and seven hundred and seventy-two were females. Eight were colored—six males and two females. Twins of the same sex, 11. Those of opposite sexes, 1.

During the month of January there were one hundred and fifty-nine births; February, one hundred and thirty-eight; March, one hundred and seventy-three; April, one hundred and fourteen; May, one hundred and fourteen; June, one hundred and thirty-five; July, one hundred and thirty-seven; August, one hundred and twenty; September, one hundred and thirty-six; October, one hundred and thirteen; November, one hundred and twenty-nine, and December, one hundred and eighteen.

The excess of births over deaths in the city was six hundred and ninety-five.

The birth rate was 26.5 in 1,000 for the year 1889, and the death rate 14.9.

Estimated population of Reading January 1, 1890, 59,655.

DEATHS.

Permits were issued by the Department for the burial of ten hundred and ninety-eight bodies during the year 1889. Of this number ninety-nine were brought here from other places, seventy-four were still-born, and thirty-four were premature births, leaving a net total for the city of eight hundred and ninety-one deaths.

Four hundred and forty-eight were males, four hundred and forty-two were females, and in one the sex was not mentioned. Of the seventy-four still-born children, forty-one were males and thirty-three females. And of the premature births, fourteen were reported as males and twenty as females.

Of the decedents, eight hundred and eleven were born in the United States, seventy-three were of foreign birth, and of seven the nativity was unknown.

Two hundred and thirty-four died under the age of one year, thirty nine prior to the second year, forty-five before reaching the fifth year, twenty-four between five and ten, one hundred and forty-six between ten and thirty, one hundred and eighty-five between thirty and sixty, one hundred and seventy-five between sixty and eighty, thirty-five between eighty and ninety, and five between ninety and one hundred. In three the ages are not given.

One hundred and eighty-nine belong to the class zymotic, one hundred and forty-four to the constitutional, four hundred and twenty-one to the local, seventy-seven to the developmental, fifty-two were the result of violence, and in eight the cause of death was not given

Adding together the number of deaths under ten years, we have three hundred and forty-two, or 38.38 per cent. of all deaths.

The average number of deaths per month was 74.25, an increase of 5.67 as compared with the year 1888.

The average number of deaths per week was 17.13.

One hundred and eight permits were issued for the burial of premature births and still-born children. These are omitted from the general summary as not properly belonging to the death rate. Prior to the year 1887 abortions, premature births and still-born children were counted into the mortality record, and made our death rate appear greater than it really was.

The estimated population for 1889 is 59,665; the annual ratio of deaths per 1,000 inhabitants is 14.9.

The following statement, in tabular form, shows the population and death rate for a period of five years, premature births and still-born children not included in the years 1887, 1888 and 1889:

Year.	Estimated population.	Total number of deaths.	Death rate.
1885,	50,500	1,025	20.2
1886,	52,250	861	16.4
1887,	55,500	1,002	18.02
1888,	57,750	823	14.2
1889,	59,655	891	14.9

Table Showing Nativity, Social Condition, Sex, etc., of Decedents During the Year 1889.

MONTHS.	NATIVITY.			CONDITION.				COLOR.		SEX.			RESIDENCE. WARDS.													Brought from a distance.	
	United States.	Foreign.	Unknown.	Married.	Single.	Widowed.	Unknown.	White.	Black.	Males.	Females.	Not given.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh	Twelfth.	Thirteenth.		
January	118	7	..	41	68	16	..	125	..	62	63	..	6	11	8	5	7	10	9	7	15	9	9	13	12	4	...
February	80	4	1	29	46	9	1	84	1	48	37	..	9	4	2	4	5	2	12	9	7	6	9	7	1	8	...
March	74	12	1	30	47	9	1	87	..	37	49	1	6	3	8	5	8	5	6	5	7	7	9	6	3	9	...
April	7	11	1	28	42	19	..	89	..	40	48	1	2	12	2	2	3	10	12	6	8	8	9	5	3	7	...
May	69	7	..	22	39	15	..	75	1	47	29	..	2	9	6	4	4	7	5	4	7	5	6	5	3	9	...
June	71	6	1	14	55	7	2	75	3	41	37	..	4	10	3	3	6	8	8	4	5	4	3	4	4	12	...
July	136	5	..	19	111	11	..	139	2	72	69	..	7	12	4	7	1	20	12	11	19	13	12	11	5	8	...
August	91	6	2	30	55	14	..	98	1	42	57	..	7	21	4	4	4	8	8	4	9	8	5	1	6	10	...
September	78	8	3	24	51	12	2	87	2	45	44	..	5	9	5	6	3	13	6	4	12	7	4	6	2	7	...
October	70	8	..	25	44	9	..	78	..	40	38	..	1	8	2	4	4	9	8	2	12	11	..	5	3	9	...
November	67	6	2	17	44	12	2	74	1	37	38	..	5	6	5	1	4	8	8	5	7	4	5	2	4	10	...
December	69	5	2	26	38	12	..	73	3	46	30	..	6	4	5	5	4	5	6	3	10	3	7	7	5	6	...
	1,000	85	13	305	640	145	8	1,084	14	557	539	2	60	109	54	50	53	105	100	64	118	85	78	72	51	..	...
Brought from a distance	81	12	6	31	46	15	7	98	1	54	44	1	..	...	..	..	..	...	...	..	...	..	..	..	..	99	...
Net deaths in the city	919	73	1	274	594	130	1	986	13	503	495	1	..	...	..	..	..	...	...	..	...	..	..	..	..	..	999

The nationality of the decedents was as follows:

United States,	900	**Hungary,**	2
Germany,	47	**Bohemia,**	1
Ireland,	19	**Scotland,**	2
Unknown,	9	**England,**	2
France,	4	**Prussia,**	1
Wales,	3	**Poland,**	2
Europe,	2	**Not given,**	4

Monthly Mortality in the city from 1880 *to* 1889 *inclusive.*

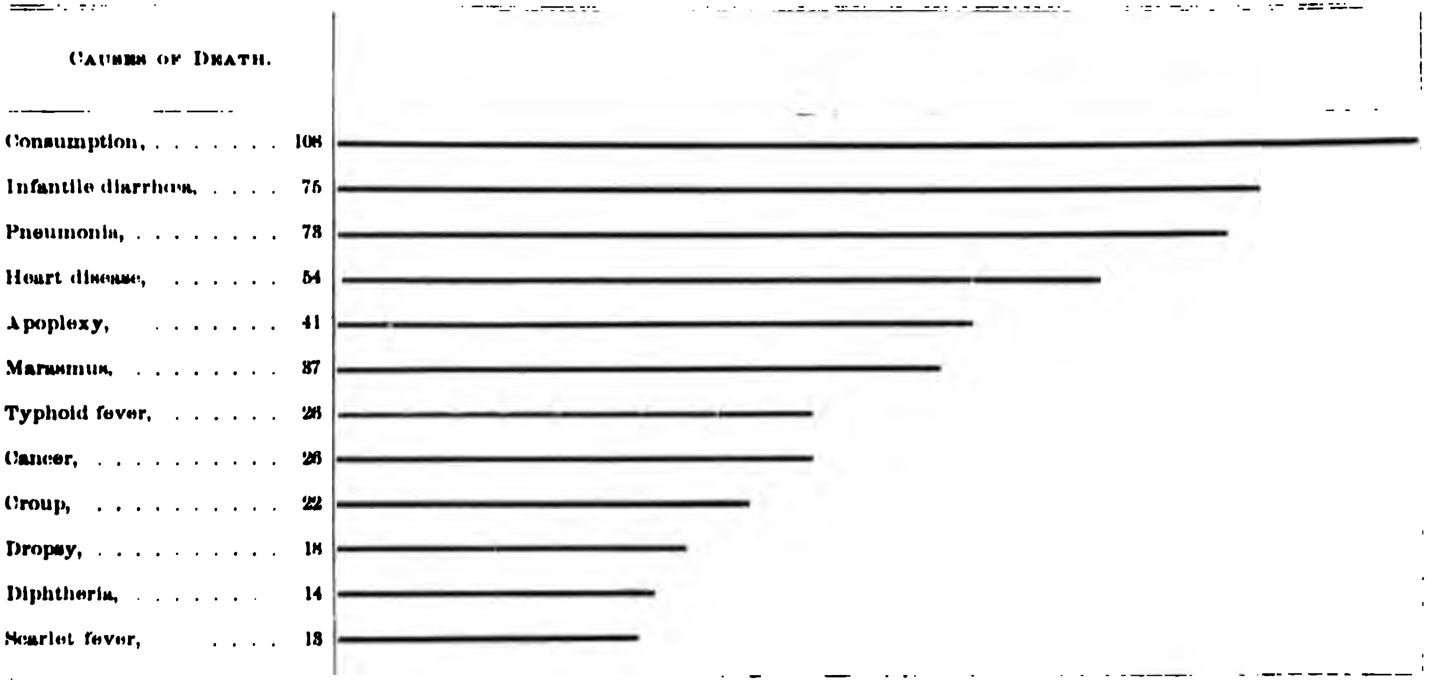
	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
January,	58	75	93	75	71	90	58	67	81	106
February,	72	69	69	78	66	93	72	61	92	66
March,	79	63	78	85	62	86	69	108	88	68
April,	48	66	79	73	53	77	73	123	64	76
May,	68	63	76	76	67	90	77	76	84	61
June,	80	64	68	70	61	83	56	62	76	54
July,	93	82	75	105	79	110	70	121	88	120
August,	64	102	82	79	86	106	98	99	95	85
September,	57	81	81	53	89	77	70	77	71	76
October,	62	83	86	61	91	75	70	67	67	56
November,	73	73	47	59	90	61	67	75	72	59
December,	66	74	56	55	102	77	81	66	63	64

For the years 1887,1888 and 1889 the premature births and still-born children are excluded from the monthly mortality table

Table showing the ages of decedents for 1889. *Premature births and still-born children not included.*

	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	Not given.	
Deaths,	242	41	48	25	22	40	101	70	67	82	98	99	42	5	8	. . .
Brought from a distance,	8	2	3	1	3	4	10	9	9	16	9	13	7	. .	5	. . .
Net deaths in the city,	234	39	45	24	19	36	91	61	58	66	89	86	35	5	3	891

Diagram Showing the Comparative Mortality by Absolute Numbers of Decedents from twelve Prominent Causes of Death during 1889, *in Reading, Pa.*



A RECAPITULATION OF SOME OF THE MOST PROMINENT DISEASES.

Pulmonary Consumption.

Again this disease heads the list with one hundred and eight deaths. The disease was most prevalent in January, February and December. The total deaths for the first quarter were thirty-six; second quarter, twenty-three; third quarter, nineteen; last quarter, thirty. Fifty-five were males and fifty-three were females. Four died before reaching their fifteenth year; forty-four between fifteen and thirty; thirty-three between thirty and fifty; twenty-three between fifty and seventy, and four between seventy and ninety.

Infantile Diarrhœa.

Under the above heading are included all cases under two years of age whose deaths have been certified as having occurred from "summer complaint," "cholera infantum," "diarrhœa," "dysentery," "entero-colitis," etc. Seventy-five deaths are attributed to the diseases mentioned.

Pneumonia.

Thirty-eight males and thirty-five females died from pneumonia. Of this number twenty-seven were adults and forty-six minors.

Croup.

Membranous croup carried off twenty-two children. This does not include diphtheritic croup.

Diphtheria.

Fourteen deaths are reported as diphtheria and diphtheritic croup.
Thirteen died from scarlet fever.
Twenty-six died from typhoid fever.
Forty-one died fom apoplexy.
Fifty-four died from "heart disease."
Thirty-seven died from marasmus.
Twenty-six died from various forms of cancer.
Nine were killed on railroad.
Seventeen were killed at silk mill.
Five were killed at P. & R. R. R. paint shops.
One was killed in hat factory.
One died from fractured skull result of a fall.
Two died from surgical shock.
Two died from pistol shots.
Two were killed by P. R. W.
Two died from corrosive poison.
Two were accidentally drowned.
Two were suffocated in bed.
Six committed suicide by hanging.

A General Summary.

		Percentage of total mortality.
Zymotic diseases,	189,	21.2
Constitutional diseases,	144,	16.1
Local diseases,	421,	47.1
Developmental diseases,	77,	8.6
Deaths from violence,	52,	5.8

Notwithstanding the increase in population in the past year, there has been a marked decrease in zymotic diseases. The percentage of zymotic or "ferment breeding" diseases is a fair indication of the sanitary condition of a city.

It is gratifying to note the wonderful progress that sanitary science has made in the last ten years. Everywhere the medical profession has been diligent in pushing the inquiry into the causes of disease, and to find out the means by which those causes could be reached and removed. Among all classes of society, is noticed a growing interest in the means of guarding against sickness and disease. People are becoming wiser and more enlightened. They are beginning to have a clearer insight into the causes of things. Intelligent people no longer attribute the consequences of their own neglect and carelessness to the "dispensations of Providence," but they begin to understand how a large proportion of the diseases which afflict humanity result from preventable causes, and that it is possible, by proper and judicious measures, to reduce the death rate and increase the average duration of human life. Sanitary reform is not bounded nor limited by selfishness. It is broadly humanitarian. The rich man no longer feels that he has no interest in his poorer neighbor, where wretchedness and squalid poverty prevails, because he knows that disease is no respecter of persons, and that a malignant fever in some remote and neglected corner of the city, may send out messengers of death to poison the atmosphere, and penetrate the costly dwellings built on broad avenues and well-kept streets. The apparent self-interest of men and women studying and applying the laws of health is therefore exactly the reverse of selfishness, since every movement for sanitary reform means clean houses and healthy surroundings for the poor and ignorant

All of which is respectfuly submitted.

M. A. RHOADS, M. D.,
President.

READING, PA., *February* 10, 1890.

4. REPORT OF BOARD OF HEALTH OF OIL CITY.

OIL CITY, PA., *March* 13, 1890.

DR. BENJAMIN LEE, *Secretary State Board of Health :*

DEAR SIR: As per your request, we would say that the names of the members of our present board of health are as follows:

First district, Dr. A. F. Coope; Second district, Dr. T. C. McCulloch; Third district, J. R. Campbell; Fourth district, B. F. Brundred (president); Fifth district, C. J. Rhea. The secretary is S. H. Gray, and health officer, H. M. Good.

We are expected each year, we understand, to forward to the State Board of Health an annual report of our work of the preceding year. We are unable to give you as complete a report as we would like, as the system of reporting contagious diseases, etc., by the physicians of the city was not put into good and efficient condition until recently. Consequently, any report we might give you in that direction would be incomplete, and we therefore prefer to omit the same. However, in our next report to you we trust we shall be able to comply in every particular, as we are putting forth every effort to secure the necessary reports from physicians, etc., promptly and regularly.

As closely as we can ascertain, there occurred during the past year 138 deaths (including deaths from accident).

Notwithstanding the very open winter and indispositions incident thereto, together with the influenza, the general health of the city has been good. We have repeatedly called the attention of the councils to the great need of sewerage in different portions of the city, and we have hopes that our requests in this direction will be granted.

Recently the board of health has made a thorough examination into the sanitary condition of the public school buildings, and have made a number of recommendations, which we think will prove very beneficial. We hope to be able to forward you soon a pamphlet containing rules and regulations recently passed by the board.

Very respectfully.,
BOARD OF HEALTH,
B. F. BRUNDRED, *President.*

Attest:
S. H. GRAY, *Secretary.*

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5. EXTRACTS FROM THE REPORT OF THE REGISTRAR OF VITAL STATISTICS OF THE CITY OF PITTSBURGH, FOR THE YEAR 1889.

State Board of Health.—It gives me pleasure to bear testimony to the very able and efficient manner in which the State Board of Health acted in the sudden and terrible calamity which befel the city of Johnstown and surrounding boroughs. Had they not burned and destroyed the hundreds of carcasses of animals that were left on the shores of the river from which our water is obtained, our mortality would, no doubt, have been much heavier.

The bureau of health deserves commendation for its arduous and unpleasant labors in assisting in the work at Johnstown, and in helping destroy that which was a menace to the health of our city.

Death Rate.—The total number of deaths was 4,286, equal to an annual death rate of 17.85 per 1,000 inhabitants. (Estimated population 240,000.) There were 1,030 deaths of infants under one year, and 762 of children between the ages of one and five years, making forty-one per cent. of the total mortality. Of the decedents, 1,245 were of foreign, and 3,041 of native birth; of the latter number 184 were colored.

Infectious Diseases—There were 3,335 cases of infectious diseases reported during the year, with 678 deaths, equal to 15.8 per cent of the total mortality. This is an increase over the previous year but a less number than for any year during the past sixteen, excepting one. They were located as follows: Old City, 775 cases and 162 deaths; East End, 1,835 cases and 319 deaths; South Side, 725 cases and 139 deaths; hospitals, 107 deaths.

There were sixty-four cases of typhoid fever treated in hospitals from outside of city.

Of those required by law to be reported the statement is as follows:

DISEASES.	Cases reported.	Deaths.	Per cent.
Small-pox,	3	2	.66
Diphtheria,	841	213	25.4
Scarlet fever,	1,327	85	6.4
Typhoid fever,	1,229	218	17.7
Cerebro-spinal fever.	26	19	73

Measles caused sixty-six deaths, being about the average for the past sixteen years, prevailing most extensively in the East End district, to wit: Old City, 18; East End 36; and South Side, 12 deaths. There were about an equal number of cases in the first three quarters of the year, the quarter closing December 31 being in excess.

Whooping Cough caused thirty-seven deaths, a number below the average for the past sixteen years, and prevailing most extensively in the quarter ending March 31. The deaths from this cause were located as follows: Old City, 6; East End, 15; South Side, 16. The decedents were all under five years of age.

Diphtheria.—During the year there were reported 841 cases of diphtheria, of which number 213 died, a mortality per cent. of 25.4. This is the lowest mortality from this cause for the past sixteen years. It prevailed most extensively during the quarter ending December 31, there being ninety-eight deaths, an almost equal number to the three remaining quarters. It prevailed most extensively in the East End district, the record being as follows: Old City, 50; East End, 116; South Side, 47. The want of proper sewerage is, no doubt, the cause of its prevalence in the East End district.

Of the decedents from this cause, nine were under one year of age, ninety-four between the ages of one and five, one hundred and eight, were from five to ten, and two were ten years of age.

The annexed statement shows the monthly mortality from this cause from 1877, when it began to prevail extensively, to 1889, inclusive.

YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
1889.	16	12	16	4	10	10	9	16	22	45	33	20	213
1888.	16	7	7	8	7	3	4	8	17	30	21	8	126
1887.	34	24	16	11	13	17	15	21	37	42	29	22	281
1886.	20	15	25	14	7	12	12	19	17	40	37	31	249
1885.	23	15	10	9	23	15	13	21	29	37	23	25	243
1884.	20	9	14	19	19	25	14	39	27	50	50	35	321
1883.	18	12	8	9	6	10	7	14	15	33	20	18	170
1882.	9	6	11	10	12	13	5	16	26	27	28	22	185
1881.	12	13	16	10	13	20	18	19	32	23	22	12	210
1880.	39	27	22	15	17	11	21	28	40	36	31	24	311
1879.	28	18	13	15	16	16	11	46	48	47	56	40	354
1878.	37	27	20	15	15	9	26	58	82	89	63	42	483
1877.	8	2	3	2	4	2	7	60	79	112	75	47	401
Total	280	187	181	141	162	163	157	357	446	601	488	346	3,547

The above figures show that the disease prevailed most extensively during the months of October, November and September, in the order named, and that the lowest mortality was during April.

The annexed statement shows the location of the decedents from this cause from the same period.

YEARS.	Old City.	East End.	South Side.	Hospitals.	Totals.	Per cent of total mortality.
1889, . .	49	116	48	. . . . . .	213	4.98
1888, . .	42	43	41	. . . . . .	126	3.01
1887, . .	76	124	80	1	281	5.96
1886, . .	59	116	73	1	249	5.89
1885, . .	74	59	110	. . . . . .	243	6.33
1884, . .	62	55	208	1	321	8.55
1883, . .	38	52	80	. . . . . .	170	5.12
1882, . .	50	70	64	1	185	4.52
1881, . .	51	72	86	1	210	4.67
1880, . .	72	107	132	. . . . . .	311	9.12
1879, . .	88	107	159	. . . . . .	354	12.11
1878, . .	123	119	241	. . . . . .	483	15.74
1877, . .	78	58	265	. . . . . .	401	11.77
Total, .	862	1,098	1,582	5	3,547	8.27

The above figures show that until within the last four years almost fifty per cent. of the number of cases occurred on the South Side, but during the last four years it has been decreasing on the South Side and increasing in the East End. Of the 3,547 decedents from this cause during the past thirteen years, 150 were infants under one year. 2,064 were children between the ages of one and five; 1,131 were between the ages of five and ten, and 202 were over ten years of age.

Variola or Small-pox—But three cases were reported during the past year, one being brought from a suburban town and sent to the Mercy Hospital, and from there was sent to the Municipal Hospital; a second, one of the nurses at Mercy Hospital, contracted the disease from the first case, and was also sent to the Municipal Hospital. Both cases were of the hæmorrhagic type, and both died. The Municipal Hospital is always in order to receive cases of this character, and we have been fortunate thus far in preventing the spread of this disease from the few cases we have had; but I cannot too strongly urge the continuance of gratuitous vaccination (which has been so thoroughly done the past years) from year to year, until a law shall be passed requiring compulsory vaccination.

Scarlet Fever—There were 1,337 cases of this disease reported during the year, of which number 85 died, a mortality per cent. of 6.35. It prevailed quite uniformly throughout the city, there being in the Old City 25 deaths: East End, 39 deaths: South Side, 21 deaths. Of the decedents from this cause 55 were under five years of age.

There were 1,229 cases of typhoid fever reported during the year, of which number 218 died, a mortality per cent. of 17.7. The greatest mortality occurred in the East End, the Old City and South Side having about an equal number, to wit: Old City, 35 deaths; East End, 88 deaths; South Side, 39 deaths; hospitals, 97 deaths. Many of the deaths occurring in the hospitals were sent there from outside of the city.

Of the deaths from this cause 27 occurred during the first quarter, 21 during the second, 96 during the third, and 74 during the fourth. The figures for the sixteen years immediately preceding show an aggregate mortality of 531 during the first or winter quarter, 428 during the second or spring quarter, 849 during the third or summer quarter, and 839 during the fourth, or autumnal quarter.

The annexed statement shows the number of deaths occurring in each month from typhoid fever during the past seventeen years. September shows the highest and June the lowest mortality from this cause. It prevailed most extensively during the last six months of the year and January.

Typhoid Fever.

MONTH.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877.	1876.	1875.	1874.	1873.	17 years agr'ate.	17 years average.
January, . .	22	17	10	7	11	9	38	27	11	7	8	17	5	11	13	15	9	231	13.5
February, .	7	8	8	5	5	11	26	23	10	21	6	9	3	5	5	15	9	176	10.3
March, . . .	8	10	14	4	6	8	25	9	9	20	10	3		9	12	15	7	169	9.9
April, . . .	5	4	8	1	6	5	5	8	20	62	4	7	6	13	4	5	16	179	10.5
May, ...	5	7	14	7	14	9	7	6	12	12	3	11	4	4	8	3	34	160	9.4
June, . . .	10	6	13	6	6	3	5	6	6	8	1	8	2	4	4	2	15	105	6.1
July, ...	26	15	22	12	18	3	8	17	25	16	3	11	4		6	7	15	208	12.2
August, . .	33	28	33	42	22	12	18	33	34	9	7	16	6	8	12	11	28	352	20.7
September, .	29	33	35	11	27	22	17	32	37	22	15	13	8	11	18	9	18	357	21.0
October, .	30	24	32	25	14	18	13	32	39	14	12	13	15	7	20	30	18	356	20.9
November, .	21	19	28	8	17	14	10	37	26	10	14	8	9	7	12	12	15	267	15.7
December, .	22	20	52	12	8	16	16	38	19	10	8	5	9	5	6	25	7	276	16.2
Total, .	218	199	269	140	154	130	188	268	248	211	91	115	71	84	120	149	191	2,838	166.9

The annexed statement shows the location of the decedents from typhoid fever and the per cent. of the mortality from this disease of the total mortality of the district, during the six years from 1884 to 1889 inclusive. These figures show that in the aggregate for the past six years, it has prevailed most extensively on the South Side, but during the year 1889 the South Side was about equal with the Old City and had about one-half as many deaths as occurred in the East End.

YEAR.	OLD CITY.			EAST END.			SOUTH SIDE.			Mortality from typhoid fever in hospitals.
	Mortality from typhoid fever.	Total mortality of district.	Per cent. of typhoid on total.	Mortality from typhoid fever.	Total mortality of district.	Per cent. of typhoid on total.	Mortality from typhoid fever.	Total mortality of district.	Per cent. of typhoid on total.	
1889, ...	35	1,148	3.05	88	1,610	5.04	39	1,127	3.40	97
1888, ...	36	1,188	3.03	63	1,404	4.49	48	1,225	3.92	44
1887, ...	30	1,332	2.25	38	1,418	2.68	130	1,517	8.57	71
1886, ...	16	1,255	1.27	30	1,355	2.21	68	1,300	5.23	26
1885, ...	26	1,184	2.20	31	1,206	2.57	74	1,110	6.67	23
1884, ...	19	1,166	1.63	37	1,042	3.55	53	1,272	4.17	21
Total, . .	162	7,269	2.23	287	8,035	3.42	412	7,551	5.53	282

The annexed Table No. 1, exhibits the location by wards, etc., of the mortality from infectious disease during the year 1889.

TABLE NO 1.—*Deaths from Infectious Diseases for the Year, showing the Location by Wards.*

WARDS.	Small pox.	Measles.	Scarlet fever.	Diphtheria.	Whooping cough.	Typhoid fever.	Cerebro-spinal fever.	All other diseases included in class A.	Total deaths from diseases included in class A.
Old City—									
First,				3			1		4
Second,				3		3	1		7
Third,		6		2		1		1	10
Fourth,			1	4		1			6
Fifth,		2	3	2			2		9
Sixth,		1	5	5	2	4	2	3	22
Seventh,			4	8		2		3	17
Eighth,			2	4	1	2	1	5	15
Ninth,		3	2	3	1		1		10
Tenth,								2	2
Eleventh,		1	7	8		9	1	2	28
Twelfth,		5	1	8	2	13	2	1	32
Total,		18	25	50	6	35	11	17	162
East End—									
Thirteenth,		3	5	10		4		3	25
Fourteenth,		7	6	7	2	16	3	2	43
Fifteenth,		6	2	9	1	4		3	25
Sixteenth,		10	1	34		12		2	59
Seventeenth,		2	3	8	2	14	4	1	34
Eighteenth,		2	1	12	3	8		3	29
Nineteenth,		3	4	14	1	5			27
Twentieth,		2	5	4		10		3	24
Twenty-first,			6	15		7		1	30
Twenty-second,						3			3
Twenty-third,			6	3	6	5			20
Total,		36	39	116	15	88	7	18	319
South Side—									
Twenty-fourth,		2	1	3	4				10
Twenty-fifth,			2	2	1	6			11
Twenty-sixth,		1	2	5		5			13
Twenty-seventh,		3	2	10	1	11			27
Twenty-eighth,			3	3	1	3			10
Twenty-ninth,			2	9	2	1			14
Thirtieth,			3	1	4				8
Thirty-first,			2	7	2	4		1	16
Thirty-second,		3	3	5		5		1	17
Thirty-third,				1	1				2
Thirty-fourth,		1	1	1					3
Thirty-fifth,						1	1		2
Thirty-sixth,		2				3		1	6
Total,		12	21	47	16	39	1	3	139
Hospitals and institutions,	2					56			58
Total,	2	66	85	213	37	218	19	38	678

Death Rate by Districts.—The following statement exhibits the death rate per 1,000 inhabitants from acute infectious diseases during the year, in the three divisions of the city.

DISTRICT.	Estimated population.	Deaths from infectious diseases.	Rate per 1,000.
Old City (first twelve wards),	75,000	162	2.16
East End (13th to 23d wards, inclusive),	100,000	319	3.19
South Side (24th to 36th wards, inclusive),	65,000	139	2.13
Total,	240,000	620	2.6

The remaining 58 deaths occurred in hospitals, etc. The above figures indicate that the highest death rate occurred in the East End, and not, as in previous years, on the South Side.

The per cent. of mortality from infectious diseases on the total mortality of the district was as follows:

DISTRICT.	Total mortality.	Mortality from infectious diseases.	Rate.
Old City,	1,148	162	14.20
East End,	1,610	319	19.80
South Side,	1,127	139	12.32
Total,	3,885	620	15.95

The remaining 401 deaths occurred in hospitals, etc. The above figures show that in the Old City, which contains about 35,000 people to the square mile, about one-seventh of all the deaths were due to infectious diseases; that in the East End, which contains about 5,000 inhabitants to the square mile, about one-fifth of all the deaths were due to infectious diseases; and that on the South Side, which contains about 12,000 people to the square mile, nearly one-seventh of all the deaths were due to infectious disease.

The following table exhibits the number of deaths caused by acute infectious diseases during the year 1889, contrasted with the sixteen years immediately preceding, with the aggregate and average of seventeen years—1873 to 1889, inclusive.

TABLE 2.

Deaths from Acute Infectious Diseases.

DISEASES.	1889.	1888.	1887.	1886.	1885	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877.	1876.	1875.	1874.	1873.	17 years aggregate.	17 years average.
Measles, ...	66	55	180	117	46	69	42	91	46	89	54	4	39	47	15	71	47	1,068	62.8
Whooping Cough, ...	37	64	43	109	65	35	80	96	37	102	62	53	136	24	55	79	57	1.134	66.7
Diphtheria, ...	213	126	281	249	243	321	170	185	210	311	354	483	401	77	64	53	78	3,814	334.8
Small-pox, ...	2	. . . .	2	. . . .	. . . .	12	17	300	448	. . . .	1	113	269	86	29	. . . .	25	1,304	76.7
Scarlet fever, ...	85	45	46	182	153	71	50	63	382	220	95	94	95	98	208	313	122	2.817	186.2
Typhoid Fever, ...	218	191	269	140	154	130	188	268	248	211	91	115	71	84	121	149	194	2,842	167.1
Cerebro-spinal fever, ...	19	17	20	13	14	10	24	34	110	19	6	2	4	2	20	18	103	435	25.5
Malarial fevers, ...	10	. . . .	4	1	. . . .	5	4	7	7	2	6	6	7	8	8	6	6	87	5.1
Erysipelas, ...	20	14	15	26	18	29	8	12	16	13	7	6	12	14	15	16	30	271	15.9
Septicæmia, ...	8	1	. . . .	. . . .	10	7	4	4	5	3	2	1	6	8	2	7	9	77	4.5
Total deaths from infectious diseases, ...	678	513	860	837	703	689	587	1,060	1,509	970	678	877	1,040	448	537	712	666	13,349	785.2
Total deaths from all causes, ...	4,286	4,180	4.713	4,225	3,840	3,753	3.318	4,090	4,498	3,410	2,923	3,068	3.408	2,898	2,957	3,381	3,519	62,469	3,674.6
Per cent., of infectious diseases on total mortality, ...	15.8	12.2	18.2	19.8	18.3	18.5	17.8	25.9	33.6	28.5	23.2	28.6	30.5	15.0	18.2	21.1	18.9	21.37	21.37

Death Rate from Infectious Diseases.—By examining the foregoing statement it will be observed that during the year 1889 there was a lower death rate from acute infectious diseases than for any year since 1876 excepting the year 1888, which was an exceptionally healthy year. It will also be observed that all of the diseases named in said statement have about the same or lower death rate than the average for the past seventeen years, excepting typhoid fever, which has a higher death rate.

Consumption.—The annexed statement exhibits the deaths from consumption, tabulated by months, and contrasted with the mortality from same cause for the past sixteen years, shows that the per cent. of the total mortality was lower than for any year since 1873.

Consumption.

MONTH.	1889.	1888.	1887.	1886.	1885.	1884.	1883.	1882.	1881.	1880.	1879.	1878.	1877.	1876.	1875.	1874.	1873.	17 years aggregate.	17 years average.
January.	29	34	40	44	38	33	42	28	30	25	28	36	23	21	31	33	26	541	31.0
February.	33	26	29	37	39	29	33	18	30	31	31	25	31	28	30	22	24	493	29.0
March.	38	36	38	36	46	44	37	35	32	29	24	29	26	44	39	27	27	587	34.7
April.	33	42	30	27	37	33	36	30	34	30	21	29	27	33	39	40	36	557	32.7
May.	26	28	37	30	32	39	23	36	34	25	20	39	28	33	33	39	25	527	31.0
June.	21	39	32	34	29	28	25	24	21	14	22	25	31	31	26	24	27	458	26.6
July.	19	33	37	32	24	23	26	19	29	29	19	25	21	26	23	21	34	440	25.8
August.	22	28	41	26	21	21	28	30	29	26	23	25	26	25	28	22	24	445	26.1
September. . . .	22	26	39	27	19	23	20	16	18	15	22	17	19	17	25	24	22	372	21.8
October.	18	21	32	30	32	24	30	23	26	23	17	25	22	25	24	26	27	425	25.0
November. . . .	28	25	23	27	31	23	28	26	28	36	30	18	30	30	18	25	31	437	25.7
December. . . .	29	25	30	30	24	35	25	31	38	31	14	22	27	28	29	28	23	460	27.5
Total. . . .	319	363	408	380	372	355	353	316	349	314	261	315	301	341	345	331	326	5,749	337.6
Total mortality,	4.286	4,189	4.713	4,225	3,840	3,753	3,318	4.090	4,493	3,410	2,923	3,068	3,408	2.896	2,957	3,381	3.519	62,460	3,673.6
Per cent, .	7.44	8.67	8.66	8.99	9.69	9.46	10.63	7.72	7.77	9.21	8.93	10.27	8.53	11.77	11.67	9.79	9.26	9.20	9.20

Pneumonia caused 447 deaths, as against 404 for the preceding year. It caused 149 deaths during the first, or winter quarter; 120 during the second quarter; 69 during the third quarter, and 109 during the quarter ending December 31.

Bronchitis (acute, chronic and capillary), caused 153 deaths, as against 222 for the previous year.

Croup was given as the cause of death, as compared with last year, 114 against 73, the decedents being all under ten years of age.

Diarrhœal Diseases including diarrhœa, 47; dysentery, 20; choleraic diarrhœa, 176; and cholera morbus, 2; show a total of 245 deaths against 458 for the previous year.

Violence including suicide, homicide, drowning, railroad injuries, burns and scalds, surgical operations, as well as various forms of injury, alcoholism, etc., caused 440 deaths against 323 for the previous year.

The annexed statement exhibits the death rate per 1,000 inhabitants in each of the three districts of the city.

DISTRICTS.	Estimated population.	Total mortality.	Per cent.
Old City (1st to 12th wards inclusive), . .	75,000	1,148	15.3
East End (13th to 23d wards inclusive,) .	100,000	1,610	16.1
South Side (24th to 36th wards inclusive),	65,000	1,127	17.3
Total, ...	240,000	3,885	16.18

The remaining 401 deaths occurred in hospitals, etc.

The following statement, derived from official sources, exhibits the mortality during 1889 in several of the principal cities in the United States and Canada:

CITIES.	Estimated population.	Deaths in 1889.	Death rate per 1,000.
New York, ...	1,575,073	39,679	25.19
Philadelphia, ...	1,040,245	20,536	19.74
Brooklyn, ...	852,467	18,480	22.17
St. Louis, ...	450,000	8,004	17.78
Boston, ...	420,000	10,259	24.42
Baltimore, ...	500,343	8,703	17.40
Cincinnati, ...	325,000	5,922	18.22
New Orleans, ...	254,000	6,075	23.92
San Francisco, ...	350,000	5,584	15.94
Buffalo, ...	260,000	4,328	16.08
Montreal, ...	207,796	5,593	26.91
Louisville, ...	227,000	3,192	14.+
Washington, ...	250,000	5,152	20.6
Cleveland, ...	240,310	4,414	18.36+
Pittsburgh, ...	240,000	4,286	17.85

The annexed statement (No. 3) shows the sex, nativity, age, the cause of death of all the decedents registered in this office during the year 1889. Of the decedents 2,404 were males, and 1,882 were females:

CONSOLIDATED ABSTRACT OF DEATHS *in Pittsburgh from all Causes, for the Year Ending, December* 31, 1889.

CAUSES OF DEATH.	NATIVITY.						AGE.														Total by sexes.		Total both sexes.
	UNITED STATES.				FOREIGN.		Under one year.	1.	2.	5.	10.	20.	30.	40.	50.	60.	70.	80.	90.	100.			
	White.		Black.																				
	M.	F.	M.	F.	M	F.															M.	T.	
General Diseases "A."																							
Measles.	40	25	...	...	...	1	15	25	22	8	...	...	...	...	...	...	...	...	...	...	40	26	66
Whooping cough.	15	20	...	1	1	...	15	10	9	3	...	...	...	...	...	...	...	...	...	...	16	21	37
Diphtheria.	89	108	1	3	7	5	9	28	66	80	28	2	...	...	...	...	...	...	...	...	97	116	213
Scarlet fever.	33	40	1	...	6	5	2	15	38	22	6	1	1	...	...	...	...	...	...	...	40	45	85
Typhoid fever.	61	43	7	2	69	36	1	1	1	16	27	83	55	17	12	4	1	...	...	...	137	81	218
Cerebro-spinal fever.	7	6	1	2	...	3	3	...	3	3	2	1	2	3	1	1	...	...	...	...	8	11	19
Small-pox.	2	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	2	...	2
Erysipelas.	5	...	2	...	1	...	5	...	...	...	...	1	1	...	1	...	...	...	...	...	8	...	8
Pyæmia.	5	6	...	1	2	...	1	1	1	4	1	3	1	...	1	...	1	...	...	...	7	7	14
Remittent fever.	1	...	1	...	2	...	...	...	1	1	...	1	...	...	1	...	...	...	...	...	4	...	4
Malarial fever.	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	1
Puerperal fever.	1	3	...	...	...	...	...	...	...	...	...	1	2	...	1	...	...	...	...	...	1	3	4
Diphtheritic croup.	2	5	...	...	...	...	1	2	2	2	...	...	...	...	...	...	...	...	...	...	2	5	7
Total.	202	256	13	9	88	50	52	82	143	134	64	98	62	21	19	5	2	...	...	...	363	315	678
General Diseases "B."																							
Consumption.	85	78	14	9	73	60	5	1	4	6	28	99	82	48	28	12	6	...	...	...	172	147	319
Tabes mesenterica.	52	39	2	2	4	4	96	5	2	...	...	...	...	...	...	...	...	...	...	...	58	54	108
Tubercular meningitis.	6	10	1	...	...	...	9	4	3	...	1	...	...	...	...	...	...	...	...	...	7	10	17
Scrofula.	16	23	2	3	2	2	24	8	7	3	1	...	1	...	3	...	...	1	...	...	20	28	48

Syphilis.	7	5	1	....	1	3	8	2	1	1	..	4	..	1	..	..	..	..	..	..	9	8	17
Rheumatism.	12	5	1	1	3	5	1	..	2	..	3	6	1	4	5	3	2	..	..	..	16	11	27
Dropsy.	2	2	....	....	6	3	1	..	..	..	1	..	1	..	4	2	2	2	..	..	8	5	13
Caries of vertebræ.	2	....	....	....	....	..	....	1	..	..	..	1	..	..	..	..	..	..	..	..	2	....	2
Cancer of breast.	....	....	....	....	....	6	....	..	..	..	..	..	1	2	..	1	1	1	..	..	....	6	6
Cancer of larynx.	....	....	....	....	1	..	....	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1
Cancer of œsophagus.	....	1	....	....	....	..	....	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	1
Cancer of stomach.	1	1	....	....	8	12	....	..	..	..	..	..	1	2	7	6	5	1	..	..	9	13	22
Cancer of liver.	3	3	....	....	1	6	....	..	..	..	..	..	1	1	3	7	..	..	1	..	4	9	18
Cancer of pancreas.	1	....	1	....	....	..	....	..	..	..	1	..	..	..	..	1	..	..	..	..	2	....	2
Cancer of omentum.	....	1	....	....	....	..	....	..	..	..	1	..	..	..	..	..	..	..	..	..	....	1	1
Cancer of uterus.	....	6	....	1	....	9	....	..	..	..	..	1	2	4	4	3	2	..	..	..	....	16	16
Cancer of face.	1	....	....	....	1	..	....	..	..	..	..	..	..	..	..	1	..	1	..	..	2	....	2
Cancer of mesentery.	....	....	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	1
Cancer of bladder.	....	....	....	....	1	..	....	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1
Cancer of pylorus.	....	....	....	....	....	1	....	..	..	..	..	..	..	..	..	..	1	..	..	..	....	1	1
Cancer of colon.	....	....	....	....	....	2	....	..	..	..	..	..	..	..	1	1	..	..	..	..	....	2	2
Cancer of neck.	....	....	....	....	1	..	....	..	..	..	..	..	..	1	..	..	..	..	..	..	1	....	1
Cancer of rectum.	....	....	....	....	....	3	....	..	..	..	..	..	..	..	1	1	1	..	..	..	....	3	3
Cancer not stated.	1	3	....	....	2	1	....	..	..	1	..	..	3	..	..	1	1	1	..	..	3	4	7
Total.	189	177	22	16	104	118	144	21	19	11	36	111	94	63	58	40	21	7	1	..	315	311	626
Diseases of "Nervous System."																							
Meningitis.	48	48	2	2	7	7	47	16	17	10	11	3	5	1	..	3	1	..	..	..	57	57	114
Congestion of brain.	20	16	1	....	3	3	19	5	4	8	..	2	1	1	1	1	1	..	..	..	24	19	43
Softening of brain.	4	....	....	....	3	..	....	..	..	1	..	..	..	1	..	2	3	..	..	..	7	....	7
Abscess of brain.	....	....	....	....	1	..	....	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1
Compression of brain.	3	1	....	....	5	1	3	..	1	..	1	..	1	..	1	1	2	..	..	..	9	1	10
Apoplexy.	12	7	....	1	19	19	....	..	..	..	..	3	1	5	13	21	10	5	..	..	31	27	58
Paralysis.	5	12	3	1	10	15	....	..	..	..	..	..	5	2	7	10	10	12	..	..	22	24	46

CONSOLIDATED ABSTRACT OF DEATHS—*Continued.*

CAUSES OF DEATH.	NATIVITY.						AGE.														Total by sexes.		Total both sexes.
	UNITED STATES.				FOREIGN.		Under one year.	1	2.	5.	10	20.	30.	40.	50.	60.	70.	80.	90.	100.			
	White.		Black.																				
	M.	F.	M.	F.	M.	F.															M.	F.	
Sclerosis	1	...	...	...	6	...	...	...	1	...	1	...	1	...	1	3	...	...	...	...	7	...	7
Hydrocephalus	6	7	1	...	...	...	11	2	...	1	...	...	...	...	...	...	...	...	...	...	7	7	14
Epilepsy	2	1	...	...	5	1	...	...	...	1	1	2	2	2	1	...	...	...	...	...	7	2	9
Convulsions	57	51	3	6	...	1	88	11	14	2	2	1	...	...	...	...	...	...	...	...	60	58	118
Locomotor ataxy	1	...	...	...	2	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	3	...	3
Spina bifida	2	5	...	...	1	1	7	...	...	1	...	...	...	...	1	...	...	...	...	...	3	6	9
Spinal disease	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	1	2
Insanity	...	1	...	...	2	1	...	...	...	...	...	...	...	2	...	1	...	1	...	...	2	2	4
Cerebritis	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	2	...	2
Tubercular meningitis	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Encephalitis	2	1	...	...	...	2	2	...	...	...	1	...	...	1	1	...	...	...	...	...	2	3	5
Cerebrum fl. albus	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	4
Pott's disease	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	1
Myelitis	1	...	...	...	1	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	2	...	2
Total	167	158	10	10	66	51	179	34	37	95	18	14	18	15	28	43	27	19	...	...	248	209	457
Diseases of "Circulatory System."																							
Endocarditis	4	3	1	...	3	3	...	...	...	1	7	...	1	1	...	2	1	1	...	...	10	4	14
Pericarditis	2	5	1	...	...	...	...	...	...	3	...	...	1	3	...	1	...	...	...	...	3	5	8
Hypertrophy and dilatation of heart	10	4	...	...	9	4	...	...	2	2	4	1	2	1	2	6	4	2	1	...	19	8	27
Fatty degeneration of heart	1	2	...	...	2	2	...	...	...	...	...	...	...	1	2	2	1	...	1	...	3	4	7

Angina pectoris.	3	1	..	..	..	1	..	..	..	..	..	1	1	..	..	1	2	..	..	..	3	2	5
Myocarditis.	2	..	..	..	2	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	4	..	4
Malformation.	5	10	..	..	..	..	15	..	..	..	..	..	..	..	..	..	..	..	..	..	5	10	15
Valve disease of heart.	26	16	3	1	26	16	2	..	..	10	6	13	14	5	18	12	8	..	..	..	55	33	88
Aneurism of aorta.	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	..	2
Cyanosis.	12	9	1	..	1	..	23	..	..	..	..	..	..	..	..	..	..	..	..	..	14	9	23
Rupture of heart.	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1
Paralysis of heart.	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1
Heart disease not stated.	13	10	1	1	21	12	..	..	1	2	3	1	4	7	12	14	12	2	..	..	35	23	58
Total.	81	61	7	2	64	38	40	..	3	19	20	16	24	21	35	39	29	5	2	..	154	99	253
Diseases of "Respiratory System."																							
Asthma.	5	2	1	..	12	5	..	..	..	..	..	2	..	5	4	6	5	2	1	..	16	9	25
Croup.	58	47	1	..	4	4	10	25	56	22	1	..	..	..	..	..	..	..	..	..	63	51	114
Pneumonia.	125	110	18	11	103	80	72	43	57	18	13	37	34	31	37	41	43	19	2	..	246	201	447
Bronchitis.	70	34	3	5	19	22	67	14	15	4	..	2	2	5	10	16	11	7	..	..	92	61	153
Congestion of lungs.	11	9	3	1	2	5	12	1	5	3	..	1	2	..	..	4	1	1	..	..	16	14	30
Hemorrhage of lungs.	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1
Laryngitis.	9	12	..	..	..	2	4	1	9	5	2	1	1	..	..	..	..	..	..	..	9	14	23
Influenza.	..	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	2
Tonsillitis.	..	1	..	..	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	2	2
Atelectasis.	4	2	..	..	1	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	5	2	7
Pleurisy.	5	1	..	..	2	1	..	..	..	..	2	2	1	2	..	2	..	..	..	..	7	2	9
Emphysema.	2	2	..	..	4	..	..	..	..	1	..	..	1	2	2	2	..	..	..	..	6	2	8
Pneumonic phthisis.	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
Total.	289	222	27	17	147	120	172	94	142	54	18	46	42	46	54	71	60	30	3	..	461	361	822
Diseases of "Digestive System."																							
Teething.	19	22	1	2	..	..	26	16	2	..	..	..	..	..	..	..	..	..	..	..	20	24	44
Stomatitis.	5	4	..	..	..	1	6	..	2	..	..	..	1	..	..	..	1	..	..	..	5	5	10

CONSOLIDATED ABSTRACT OF DEATHS—*Continued.*

CAUSES OF DEATH.	NATIVITY.						AGE.														Total by sexes.		Total both sexes.
	UNITED STATES.				FOREIGN.		Under one year.	1.	2.	5.	10.	20.	30.	40.	50.	60.	70.	80.	90.	100.			
	White.		Black.																				
	M.	F.	M.	F.	M.	F.															M.	F.	
Diseases "Digestive System." Con'd.																							
Dysentery	5	6	....	....	4	5	3	2	3	..	..	..	1	4	2	1	4	..	..	..	9	11	20
Scirrhosis of liver	9	....	....	....	18	6	..	..	..	..	..	2	..	8	9	10	4	..	..	..	27	6	33
Gastritis	36	43	2	2	13	14	41	13	7	6	7	3	6	5	4	4	11	3	..	..	51	59	110
Choleraic diarrhœa	86	79	3	3	4	1	119	37	14	3	1	..	1	..	1	..	..	..	..	..	93	83	176
Diarrhœa	25	8	1	2	9	2	21	4	2	1	..	2	1	3	2	3	5	3	..	..	35	12	47
Enteritis	45	47	4	1	6	5	66	19	14	3	3	1	2	2	2	2	3	1	..	..	55	63	118
Intestinal obstruction	5	4	....	....	3	3	5	1	1	1	1	..	1	2	1	1	..	1	..	..	8	7	15
Abscess of liver	2	3	1	....	2	1	....	1	1	..	1	..	..	4	1	1	..	..	..	..	5	4	9
Hypertrophy of liver	....	....	....	1	1	....	....	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1	2
Gastric ulcer	1	....	....	....	1	1	....	..	..	..	1	..	..	..	1	1	..	..	..	..	2	1	3
Ulceration of intestines	1	....	....	1	2	....	....	..	..	..	..	1	..	..	1	1	1	..	..	..	3	1	4
Jaundice	1	....	....	....	....	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	2
Peritonitis	12	10	1	....	10	15	7	..	2	2	2	9	4	3	6	6	7	..	..	..	23	25	48
Hepatitis	4	2	....	....	4	2	3	..	..	..	..	1	..	2	2	3	1	..	..	..	8	4	12
Abdominal tumor	....	....	....	....	....	2	....	..	..	..	..	..	..	1	..	1	..	..	..	..	....	2	2
Imperforate anus	....	1	....	....	....	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	1
Abdominal abscess	1	....	....	....	....	....	....	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1
Fatty liver	....	....	....	....	1	....	....	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1
Atrophy of liver	....	....	....	....	....	1	....	..	..	..	..	..	..	..	1	..	..	..	..	..	....	1	1

Cholera morbus.	....	1	....	....	1	....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	1	2
Abscess of rectum.	....	1	....	....	....	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	1
Typhlitis.	1	1	....	....	....	....	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	1	2
Hernia,	....	....	....	....	1	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	1	2
Congestion of liver,	....	....	....	....	1	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1
Malformation of mouth and throat,	....	1	....	....	....	....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	....	1	1
Total,	258	248	13	12	81	61	300	93	48	16	17	20	18	34	38	36	39	8	1	..	352	316	668
Diseases of "Urinary System."																							
Bright's disease.	27	14	....	1	7	12	..	..	..	3	..	5	10	9	7	18	8	1	..	..	34	27	61
Nephritis.	11	5	1	2	8	....	..	..	2	1	1	3	1	5	3	5	6	..	..	..	20	7	27
Malformation of kidneys,	1	....	....	....	1	....	1	..	..	..	..	..	..	..	..	1	..	..	..	..	2	....	2
Diabetes.	3	1	....	....	2	1	..	..	1	1	1	..	..	1	2	..	1	..	..	..	5	2	7
Cystitis.	1	....	1	....	4	3	..	..	1	..	..	..	..	..	..	3	4	1	..	..	6	3	9
Prostititis,	....	....	....	....	1	....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	....	1
Renal calculi.	1	....	....	....	....	....	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	....	1
Stricture of urethra.	....	....	1	....	....	....	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	....	1
Total.	44	20	3	3	23	16	1	..	4	5	2	8	11	15	13	28	20	2	..	..	70	39	109
Diseases of "Generative System."																							
Metritis.	....	4	....	....	....	1	..	..	..	..	..	3	1	1	..	..	..	..	..	..	....	5	5
Metro peritonitis.	....	2	....	....	....	2	..	..	..	..	..	2	1	1	..	..	..	..	..	..	....	4	4
Placenta prævia.	1	1	....	....	....	2	1	..	..	..	..	..	1	2	..	..	..	..	..	..	1	3	4
Parturition.	1	2	....	....	....	....	2	..	..	..	..	..	1	..	..	..	..	..	..	..	1	2	3
Puerperal convulsions.	....	....	....	....	....	3	..	..	..	..	..	..	1	2	..	..	..	..	..	..	....	3	3
Puerperal septicæmia.	....	6	....	1	....	6	..	..	..	..	2	7	4	..	..	..	..	..	..	..	....	13	13
Postpartum hæmorrhage.	....	3	....	....	....	2	..	..	..	..	..	1	3	1	..	..	..	..	..	..	....	5	5
Fibroid tumor of uterus.	....	1	....	....	....	....	..	..	..	..	..	..	1	..	..	..	..	..	..	..	....	1	1
Tumor of ovary.	....	....	....	....	....	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	....	1	1
Total.	2	19	....	1	....	17	3	..	..	..	2	13	13	7	..	1	..	..	..	..	2	37	39

CONSOLIDATED ABSTRACT OF DEATHS—*Continued.*

CAUSES OF DEATH.	NATIVITY.						AGE.														Total by sexes.		Total both sexes.
	UNITED STATES.				FOREIGN.																		
	White.		Black.																				
	M.	F.	M.	F.	M.	F.	Under one year.	1.	2.	5.	10.	20.	30.	40.	50	60.	70.	80.	90.	100	M.	F.	
Unclassified.																							
Premature birth	60	40	2	3	. . . .	2	107	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	62	45	107
Old age	11	13	1	1	20	29	. . . .	. .	. .	. .	. .	. .	. .	. .	. .	3	33	32	6	1	32	43	75
Ischio rectal abscess	. . . .	1	. . . .	. . . .	. . . .	. . . .	. . . .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. . . .	1	1
Gangrene	. . . .	2	. . . .	. . . .	1	. . . .	1	. .	. .	1	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	1	2	3
Carbuncle	. . . .	1	. . . .	. . . .	1	. . . .	. . . .	. .	. .	. .	. .	. .	. .	. .	1	1	. .	. .	. .	. .	1	1	2
Abscess, not stated	. . . .	2	. . . .	. . . .	. . . .	. . . .	. . . .	1	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. . . .	2	2
Cleft palate	. . . .	1	. . . .	. . . .	. . . .	. . . .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. . . .	1	1
Tumor, not stated	. . . .	1	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. .	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. . . .	1	1
Hip joint disease	1	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	. . . .	1
Monstrosity	1	1	. . . .	. . . .	. . . .	. . . .	2	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	1	2
Total	73	62	3	4	22	31	111	2	. .	1	1	. .	2	1	1	4	33	32	6	1	98	97	195
Violent Causes.																							
Railroad injuries	44	1	1	1	46	4	1	. .	. .	4	7	35	18	20	7	3	2	. .	. .	. .	91	6	97
Suicide by cutting throat	1	. . . .	. . . .	. . . .	1	. . . .	. . . .	. .	. .	. .	. .	. .	. .	2	. .	. .	. .	. .	. .	. .	2	. . . .	2
Suicide by shooting	5	1	1	. . . .	4	. . . .	. . . .	. .	. .	. .	. .	2	4	2	1	1	. .	. .	. .	. .	10	1	11
Suicide by poison	. . . .	1	. . . .	. . . .	1	1	. . . .	. .	. .	. .	. .	1	1	1	. .	. .	. .	. .	. .	. .	1	2	3
Homicide by cutting throat	2	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. .	1	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	2	. . . .	2
Homicide by shooting	. . . .	. . . .	2	. . . .	. . . .	. . . .	. . . .	. .	. .	. .	. .	1	. .	1	. .	. .	. .	. .	. .	. .	2	. . . .	2
Homicide, not stated	2	. . . .	. . . .	1	1	. . . .	. . . .	. .	. .	. .	. .	1	1	2	. .	. .	. .	. .	. .	. .	3	1	4

Poison by alcohol	8	1	1		9	4					2	1	4	8	7	1					18	5	23
Poison by carbolic acid		1												1								1	1
Poison by arsenic	1												1								1		1
Poison by lead					1								1								1		1
Poison by worm lozenges		1								1												1	1
Asphyxia	1	1			1		2					1									2	1	3
Asphyxia by crushing	6	1			5						1	5	2	3	1						11	2	12
Asphyxia by drowning	7	1	1		3	4	1	1		3		3	2	2	2	2					11	5	16
Asphyxia by overlying		2					2															2	2
Fracture of spine					2									1			1				2		2
Fracture of skull	10	1			14	1			1	2		5	11	6			1				24	2	26
Fracture of femur	1	2				2							1				2	1	1		1	4	5
Fracture of pelvis	1														1						1		1
Burns and scalds	14	6	2		8	13		3	7	8	3	5	6	8	2	1					24	19	43
Falls	11	1			11	2				1	2	2	6	8	5	3	2	1			22	3	25
Exposure						1												1				1	1
Run over by vehicles		1			2				1												2	1	3
Gun shot wound			1	2										2	1						1	2	3
Multiple injury	16	1	3		15				1	1	8	11	7	3		2		2			34	1	35
Ovariotomy		1				2							1	1	1							3	3
Laparotomy						1							1									1	1
Herniotomy	2	3			2	1							2	3	3						4	4	8
Amputation of leg	1				1								1		1						2		2
Instrumental delivery	1					1	2														1	1	2
Hæmorrhage of umbilicus	2	1					3														2	1	3
Exhaustion					2						1		1								2		2
Rupture of urethra					1										1						1		1
Ulcer of leg						1										1						1	1
Kicked by mule					1										1						1		1

CONSOLIDATED ABSTRACT OF DEATHS—*Continued.*

CAUSES OF DEATH.	NATIVITY.						AGE.														Total by sexes.		Total both sexes.
	UNITED STATES.				FOREIGN.		Under one year.	1.	2.	5.	10.	20.	30.	40.	50.	60.	70.	80.	90.	100.			
	White.		Black.																				
	M.	F.	M.	F.	M.	F.															M.	F.	
Violent Causes.—Continued.																							
Shock from burst sewer,	1	....	....	....	1	....	....	..	..	..	..	..	1	1	..	..	..	..	..	..	2	....	2
Suffocated by sewer gas,	....	....	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1
Strangled during delivery,	9	2	....	....	....	....	11	..	..	..	..	..	..	..	..	..	..	..	..	..	9	2	11
Broken neck (accident),	1	....	....	....	....	....	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1
Foreign body in larynx,	1	....	....	....	....	....	....	1	..	..	..	..	..	..	..	..	..	..	..	..	1	....	1
Concussion of brain,	....	....	....	....	1	1	....	..	..	..	..	..	..	..	..	2	..	..	..	..	1	1	2
Traction road injuries,	1	1	....	....	....	....	....	..	1	..	..	..	..	..	..	..	..	..	1	..	1	1	2
Boiler explosion,	2	....	....	....	2	....	....	..	..	..	..	2	1	1	..	..	..	..	..	..	4	....	4
Removal of lipoma,	....	....	....	....	1	....	....	..	..	..	..	..	1	..	..	..	..	..	..	..	1	....	1
Unknown causes,	17	18	1	....	17	13	15	16	12	11	2	1	1	3	2	2	1	..	..	..	35	31	66
Total,	168	49	13	4	154	52	37	22	24	31	26	76	77	75	36	18	11	6	1	..	335	105	440
Total mortality,	1,532	1,262	111	78	749	554	1,030	342	420	301	204	397	361	298	282	285	242	109	14	1	2,404	1,882	4,286

Births.—The number of living infants born during the year in this city whose names, parentage, etc., were registered in this office, amounted to 6,382, equal to 26.6 per 1,000 inhabitants, and an increase of 280 as compared with the previous year. The males exceeded the females by 370.

The annexed statement shows the birth rate in each of the three divisions of the city:

DISTRICT.	Estimated population.	Births.	Birth rate per 1,000.
Old City,	75,000	1,668	22.24
East End,	100,000	2,734	27.34
South Side,	65,000	1,980	30.46
Total,	240,000	6,382	26.68

The above figures show that the highest birth rate was on the South Side and in the East End, in the order named.

Still Births.—The number of dead-born infants reported during the year was 395.

The annexed statement shows the number of cases in which the cause of the dead-birth was stated by the attendant:

CAUSES AFFECTING THE MOTHER.		CAUSES AFFECTING THE FŒTUS.	
Prolonged labor,	29	Hydrocephalus,	4
Illness, not stated,	15	Premature separation of placenta,	6
Deformed pelvis,	8	Diseased placenta,	2
Fright,	9	Strangled by cord,	9
Injury, not stated,	12	Hydrometria,	2
Overwork,	17	Shoulder presentation,	4
Falls,	29	Arm presentation.	1
Pneumonia,	1	Breech presentation,	16
Typhoid fever,	2	Transverse presentation,	1
Consumption,	1	Foot presentation,	1
Uterine inertia,	1	Head presentation,	1
Convulsions,	2	Craniotomy,	1
Syphilis,	3	Dropsy of amnion,	1
Bright's Disease,	1	Pracenta prævia,	7
		Detached placenta,	6
Total,	130	Prolapse of cord,	12
		Total,	74

Marriages.—During the year 2,237 marriages were solemnized in this city and registered in this office, an increase of 22 over the previous year, and equal to 9.3 per 1,000 inhabitants. Following were the ceremonies employed:

Roman Catholic,	737	Baptist,	42
Civil,	354	German Protestant,	30
Methodist,	270	United Presbyterian,	24
Presbyterian,	258	Evangelical Association,	24
United Evangelical,	211	German Reformed,	12
Lutheran,	98	Hebrew,	12
Episcopal,	60	Congregational,	6
Evangelical Lutheran,	97	Church of God,	2

The annexed statement shows the number of births, marriages, deaths and still-births, by months, occurring in the city of Pittsburgh during the year 1889:

MONTHS.	BIRTHS.			Marriages.	Deaths.	Still births.
	Males.	Females.	Total.			
January,	293	276	569	161	364	41
February,	278	249	527	138	313	33
March,	301	282	583	166	394	29
April,	197	154	351	148	355	23
May,	283	309	592	217	324	31
June,	268	242	510	218	345	25
July,	279	281	560	168	491	39
August,	330	215	545	170	386	33
September,	379	307	686	198	352	32
October,	226	260	486	169	321	37
November,	282	217	499	215	325	39
December,	260	214	474	269	316	33
Total,	3,376	3,006	6,382	2,237	4,286	395

The above figures show that the largest number of births occurred in September, and the smallest number in April: that the largest number of marriages occurred in December, and the smallest number in February, and the largest number of deaths occurred in July, and the smallest number in February.

The following statement shows the number of births, marriages and deaths recorded in this office since its organization. The original registration act, in force from July 1, 1852, to July 1, 1870, inclusive, provided only for the registration of deaths. The new act provides for the registration of births and marriages, as well as deaths:

ORIGINAL REGISTRATION ACT.		NEW REGISTRATION ACT.			
Year.	Deaths.	Year.	Births.	Marriages.	Deaths.
1852, . . .	*365	1870, . .	*1,750	*562	1,867
1853, . . .	898	1871, . .	2,886	1,059	2,531
1854, . . .	1,831	1872, . .	3,378	1,143	2,456
1855, . . .	1,000	1873, . .	5,175	1,782	3,519
1856, . . .	815	1874, . .	5,084	1,533	3,381
1857, . . .	943	1875, . .	4,930	1,192	2,957
1858, . . .	888	1876, . .	4,264	1,118	2,896
1859, . . .	820	1877, . .	4,215	1,110	3,408
1860, . . .	960	1878, . .	4,179	1,174	3,068
1861, . . .	948	1879, . .	4,449	1,290	2,923
1862, . . .	1,066	1880, . .	4,756	1,492	3,410
1863, . . .	998	1881, . .	4,197	1,782	4,493
1864, . . .	1,162	1882, . .	4,637	1,945	4,090
1865, . . .	999	1883, . .	5,513	2,224	3,318
1866, . . .	1,070	1884, . .	5,367	2,182	3,753
1867, . . .	1,042	1885, . .	5,675	1,909	3,840
1868, . . .	1,233	1886, . .	5,949	1,723	4,225
1869, . . .	1,477	1887, . .	5,954	2,033	4,713
		1888, . .	6,102	2,215	4,189
		1889, . .	6,382	2,237	4,286
	18,415		94,842	31,705	87,738

*Six months.

Respectfully submitted.

J. GUY McCANDLESS, M. D.,
Registrar Vital Statistics.

APPENDIX D.

METEOROLOGICAL OBSERVATIONS.

PENNSYLVANIA STATE WEATHER SERVICE.

ABSTRACT FROM MONTHLY WEATHER REVIEW FOR JANUARY, 1890.

[Prepared under the Direction of the Committee on Meteorology of Franklin Institute.]

TEMPERATURE.

The mean temperature of the state for January, 1890, determined from 64 stations was 37°.7, which is about 11° above the normal, which makes this month the warmest January since 1880. The mean of the daily maximum and minimum temperatures 46°.1 and 28°.9 give an average daily range of 17°.2.

Greatest local monthly range 67° at Blue Knob.

Least local monthly range 46° at Annville, Catawissa and Myerstown.

Greatest daily range 44° on 12th at Chambersburg.

Least daily range 2° on 7th at Tipton.

The averages of the greatest and least daily ranges were 34°.0 and 5°.8.

The highest temperatures recorded during the month were Coatesville, 77°; Gettysburg, 75°; McConnellsburg, 74; Centre Valley, 74°, and Chambersburg, 73°.

The lowest were Blue Knob, minus 2°; Dyberry, 2°; Somerset, 3°, and Eagles Mere, 5°.

Most stations report the warmest day of the month on the 12th, and the coldest on the 22d.

According to the mean temperatures, Uniontown, 43°.2; Philadelphia, 41°.8, and Waynesburg, 41°.8, were the warmest stations, and Eagles Mere, 31°.0, and Dyberry, 31°.6, the coldest.

BAROMETER.

The mean pressure for the month, 30.52, is about normal. Philadelphia reports the highest, 30.760 on the 1st, and Erie the lowest 29.400 on the 13th.

PRECIPITATION.

The average rainfall of the state was 3.04 inches, which is about .30 below the normal. The western part of the state received an excess, and the eastern portion a deficiency. The largest totals in inches rainfall and melted snow) were Clarion, 6.87 ; Uniontown, 610 ; Tionesta, 6.00 and Somerset, 5.60.

The least were Chambersburg, 1.80 ; South Eaton, 1.60; Charlesville, 1.52 ; and New Bloomfield, 1.47. The heaviest rainfall occurred on the 15th, at which time over one inch was reported from several stations.

The snowfall was very light, The greatest totals for the month were Bleu Knob, 16 inches; Greenville, 11 inches; Honesdale, 10 inches; Eagles Mere, 8 inches, and Somerset, 7 inches. Several stations report none during the month.

WIND AND WEATHER.

The prevailing wind was from the west and northwest. On account of the high temperature the weather was favorable for out-door pursuits. Building operations have scarcely been interrupted on account of cold.

Average Number.—Rainy days, 14; clear days, 7; fair days, 8; cloudy days, 16.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for January, 1890.*

County	Station.	Elevation above sea level (feet).	Barometer Reduced to Sea Level.			Temperature.											
							Maximum.		Minimum.				Daily Range.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	* Greatest.	Date.	Least.	Date.
Adams.*	Gettysburg.	624	. . . .	. . . .	. . . .	39.1	75.0	12	10.0	25	49.1	29.0	20.0	37.0	29	3.0	11
Allegheny.*	Pittsburgh.	847	30.210	30.700	29.600	41.5	71.0	12	11.0	22	50.0	33.0	17.0	39.0	13	6.0	7
Bedford,	Charlesville,	1,300	. . . .	. . . .	. . . .	41.5	73.0	12	8.0	25	49.3	28.5	20.8	43.5	29	8.0	21
Berks.*	Reading	304	30.236	30.658	29.719	38.6	66.0	13	15.0	23	48.1	29.1	19.0	35.0	17	8.0	11
Blair,†	Altoona,	1.181	. . . .	. . . .	. . . .	42.6	69.0	13	14.0	22	51.5	33.6	17.9	39.0	14	8.0	5
Blair.	Hollidaysburg.	947	. . . .	. . . .	. . . .	38.7	71.0	2. 12	8.0	22	47.8	27.7	20.1	40.0	29	7.0	7
Bradford,	Wysox,	718	30.206	29.562	29.592	35.3	64.0	13	9.0	23	42.7	26.8	15.9	32.5	29	7.5	7
Bucks,	Quakertown,	536	30.210	30.740	29.680	37.3	69.5	12	14.0	25	46.6	27.9	18.7	36.0	12	9.0	11
Cambria,*	Johnstown,	1.184	30.255	30.694	29.688	41.3	72.0	12	10.0	22	51.8	30.5	21.3	38.0	13	9.0	30
Cameron,	Emporium,	1,030	. . . .	. . . .	. . . .	36.4	62.0	12. 13	9.0	25	45.3	26.4	18.9	38.0	25	6.0	21
Carbon,*	Mauch Chunk,	550	. . . .	. . . .	. . . .	35.7	64.0	13	12.5	25	44.5	27.0	17.5	34.0	29	7.5	31
Centre,	State College – Agricultural Experiment Station,	1,191	30.163	30.674	29.560	36.6	65.0	2. 13	7.0	22	45.0	27.6	17.4	35.0	13	5.0	30
Chester,	West Chester,	455	30 215	30.660	29.634	39.6	71.5	12	16.0	22	47.5	31.6	15.9	34.5	12	5.5	30
Chester,	Westtown (17 days),	350	30.139	30.697	29.596	40.4	68.0	12	18.0	22. 25	46.3	32.8	13.5	22.5	29	4.5	30
Clarion,	Clarion— State Normal School,	1.530	. . . .	. . . .	. . . .	36.5	66.0	13	6.0	22	43.1	24.3	18.8	39.5	25	5.0	22
Clearfield,	Grampian Hills,	1.450	. . . .	. . . .	. . . .	34.7	60.0	12, 13	3.0	22	41.6	28.2	13.4	32.0	29	4.0	7
Clinton,	Lock Haven,	560	. . . .	. . . .	. . . .	36.3	66.0	13	12.0	22	42.6	24.1	18.5	26.0	13	8.0	5
Columbia,	Catawissa,	491	. . . .	. . . .	. . . .	38.0	64.5	13	17.5	22	44.0	31.5	12.5	25.5	2	4.0	7
Cumberland,	Carlisle,	480	. . . .	. . . .	. . . .	58.0	68.0	6	15.0	22	47.2	29.6	17.6	34.0	29	7.0	23
Dauphin.*	Harrisburg,	361	30.260	30.732	29.706	37.6	67.0	14	15.0	22	38.5	30.0	8.5	32.0	12	5.0	11
Delaware,	Swarthmore— Swarthmore College,	190	30.214	30.614	29.747	40.2	67.0	12	18.0	22	47.9	32.5	15.4	32.0	2	2.4	7
Erie.*	Erie,	681	30.150	30.720	29.400	38.0	68.0	12	13.0	22	47.0	29.0	18.0	36.0	11	4.0	7
Fayette,	Uniontown,	1,000	30.208	30.636	29.598	43.2	72.0	11	10.0	22	50.0	33.9	16.1	31.0	1	3.0	7
Forest,	Tionesta,	1.067	. . . .	. . . .	. . . .	35.8	72.0	12	10.0	22, 24	45.6	28.4	17.2	35.0	13	3.0	8
Franklin.*	Chambersburg— Wilson Female College (29 days),	618	30.190	30.668	29.671	39.3	73.0	12	11.0	22	50.1	28.1	22.0	44.0	12	6.0	1
Fulton,	McConnellsburg,	875	. . . .	. . . .	. . . .	40.5	74.0	12	13.0	22	50.4	29.8	20.6	40.0	29	7.0	11
Greene,	Waynesburg,	750	. . . .	. . . .	. . . .	41.8	70 0	12	9.0	22	52.2	35.5	16.7	38.0	13	7.0	21
Huntingdon.*	Huntingdon— The Normal College,	650	. . . .	. . . .	. . . .	38.4	72.5	12	11.5	22	48.8	28.0	20.8	39.5	29	3.5	30
Indiana,	Indiana— State Normal School,	1,350	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .

Lancaster,	Lancaster (18 days),	413	30.257	30.659	29.566	35.7	58.5	20	15.0	22	44.8	26.9	17.9	30.0	29	10.0	31
Lawrence,	New Castle,	982	....	....	....	39.3	68.0	13	8.0	22	47.3	27.6	19.7	34.0	13	9.0	
Lebanon,	Annville—																
	Lebanon Valley College,	339	....	....	....	30.4	64.9	6	18.0	22	....	....	....	....	29	4.	25
Lehigh,	Coopersburg,	530	....	....	....	37.8	70.0	12	16.0	22, 23	48.9	29.5	19.4	30.0	12	10.	10
Luzerne,	Drifton,													37.0			
	Drifton Hospital—	1,655	....	....	....	34.2	63.0	12	9.0	22	43.5	26.8	17.	34.0	13		30
Lycoming,†	Nisbet,	550	....	....	....	35.6	....	....	....	....	....	....					
Mercer,*	Greenville—																
	Thiel College,	1,000	30.141	30.682	29.471	35.0	66.0	12	6.3	22	45.9	23.8	22.1	42.0	2	10.0	30
Mifflin,	Lewistown,	500	....	....	....	38.2	65.5	6	13.0	22	47.5	28.5	19.0	36.0	29	6.0	15
Montgomery	Pottstown,	150	....	....	....	39.9	67.0	13	19.0	22	46.0	22.0	13.0	32.0	29	1.0	11
Northampton	Bethlehem,	360	....	....	....	39.7	67.0	13	17.0	22, 23	46.0	30.0	16.0	32.0	8	8.0	10
Perry,	New Bloomfield,	400	....	....	....	37.4	67.0	6	10.0	21	46.0	27.8	18.	34.0	12	6.0	27
Philadelphia,*	Philadelphia—																
	Signal Office,	117	30.246	30.760	24.650	41.8	72.0	12	19.0	22, 23	49.4	34.	15.	32.0		6.	
Potter,	Coudersport,	1,670	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Schuylkill,	Girardville,	1,000	30.207	30.062	29.723	36.4	64.0	6	14.0	22	44.0	21.0	16.0	32.0	13	6.0	10
Snyder,	Selinsgrove (23 days),	445	....	....	....	37.0	66.0	6	14.0	22	46.4	28.6	17.8	40.0	29	0	1
Somerset,	Somerset,	2,250	....	....	....	38.0	65.0	12	3.0	22	48.3	26.1	22.2	38.0	25	10.0	8
Sullivan,	Eagles Mere,	2,060	30.264	30.784	20.749	31.0	57.0	6	5.0	22	36.1	23.0	13.1	24.0	5	3.0	31
Tioga,	Wellsboro',	1,327	30.149	30.607	29.585	34.9	63.0	2	10.0	22	41.7	28.0	13.7	26.0	18	3.0	7
Union,*	Lewisburg,	450	....	....	....	37.0	65.0	6	15.0	15	44.7	29.3	15.4	28.0	2	0	31
Warren,	Columbus,	1,410	....	....	....	34.7	62.0	11, 12	6.0	18, 22	41.2	28.	13.	34.0	18	0	21
Washington,	Canonsburg,	950	30.289	30.480	29.444	39.6	69.0	13	8.0	22	48.9	29.	19.	41.0	12	4.0	7
Wayne,	Honesdale,	1,000	....	....	....	33.0	62.0	13	9.0	25	40.1	25.	14.	36.0	29	4.0	7
Westmoreland,	Greensburg,	1,175	....	....	....	....	....	....	....	....					....	....	....
Wyoming,*	South Eaton,	660	....	....	....	36.2	64.0	18	11.0	23	42.9	27.6	15.	30.0	29	6.0	30
York,*	York,	385	30.154	30.779	29.591	39.9	66.0	12	12.0	22	49.5	29.	20.	37.5	13	8.0	21

*Observations taken at 8 a. m. and 8 p. m.

†Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.				NUMBER OF DAYS.			WIND.			Observers.
				Total inches.	Total snowfall during month.	Depth of snow on ground at end of month.	Number of days rainfall.	Clear.	Fair.	Cloudy.	PREVAILING DIRECTION. 7 a. m.	2 p. m.	9 p. m.	
Adams,*	Gettysburg,	...	...	2.25	1.00	...	13	7	11	13	S	S	SW	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	83.6	36.8	4.18	...	...	18	4	4	23	NW	NW	NW	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	74.5	29.0	1.52	.50	...	12	5	14	12	SW	W	SW	Miss E. A. G. Apple.
Berks,*	Reading,	92.9	34.6	3.05	...	...	8	7	9	15	NW	NW	NW	C. M. Dechant, C. E.
Blair,†	Altoona,	69.2	33.0	2.17	...	...	10	...	...	...	...	...	...	Dr. Charles B. Dudley.
Blair,	Hollidaysburg,	73.0	31.0	3.04	1.00	...	17	8	6	17	W	W	W	Prof. J. A. Stewart.
Bradford,	Wysox,	80.4	29.9	1.99	...	...	13	6	2	23	W	W	W	Charles Beecher.
Bucks,	Quakertown,	84.0	31.3	3.19	...	...	14	4	12	15	NW	SW	SW	J. L. Heacock.
Cambria,*	Johnstown,	81.4	36.0	4.97	1.75	...	24	2	11	18	S	...	SE	E. C. Lorentz.
Cameron,	Emporium,	77.0	29.0	3.80	.75	...	15	6	4	22	W	W	W	T. B. Lloyd.
Carbon,*	Mauch Chunk,	...	...	2.86	1.00	...	10	11	13	7	NW	NW	NW	John J. Boyd.
Centre,	State College—Agricultural Experiment Station,	84.1	33.3	2.78	...	...	15	3	8	20	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	72.0	31.0	2.60	...	...	13	11	7	13	NW	NW	NW	Jesse C. Green, D. D. S.
Chester,	Westtown (17 days),	...	...	...	...	...	...	...	...	...	NW	W	W	Prof. Wm. F. Wickersham.
Clarion,	Clarion—State Normal School,	86.6	36.5	6.87	.75	...	11	...	...	...	SW	SW	SW	C. M. Thomas, B. S.
Clearfield,	Grampian Hills,	...	...	4.41	6.00	...	23	3	6	22	SW	SW	SW	Nathan Moore.
Clinton,	Lock Haven,	...	...	3.14	1.50	...	17	7	4	20	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,	...	...	2.06	...	...	13	...	...	...	...	...	...	Robert M. Graham.
Cumberland,	Carlisle,	84.0	34.0	2.16	.50	...	13	4	13	14	W	W	W	J. E. Pague.
Dauphin,*	Harrisburg,	88.6	31.8	2.15	...	...	14	5	10	16	NW	NW	NW	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore—Swarthmore College,	78.6	34.9	1.87	...	...	8	3	11	17	NW	SW	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	80.0	30.0	4.50	...	...	22	3	4	24	S	S	S	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	...	...	6.10	...	...	13	6	17	8	...	...	...	Wm. Hunt.
Forrest,	Tionesta,	80.1	30.0	6.00	4.00	...	10	...	...	...	SW	SW	SW	R. L. Haslet.
Franklin,*	Chambersburg—Wilson Female College (29 days),	78.0	30.4	1.80	...	...	5	...	...	...	...	...	...	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	75.3	33.3	2.09	...	...	8	10	8	13	S	W	W	Thomas F. Sloan.
Greene,	Waynesburg,	...	...	3.72	1.00	...	14	4	6	21	...	...	...	Capt. W. C. Kimber.
Huntingdon,*	Huntingdon—The Normal College,	...	...	3.00	...	...	18	10	5	16	...	...	...	Prof. W. J. Swigart.
Indiana,	Indiana—State Normal School,	...	...	...	...	...	...	...	...	...	...	...	...	Prof. S. C. Schmucker.

Lancaster.	Lancaster (18 days).	80.8	29.	2.03	...	...	...	...	...	...	NW	NW	SW	E. E. Weller.
Lawrence.	New Castle,			4.54	1.50	...	15	5	9	17	S	S	S	Wm. T. Butz.
Lebanon.	Annville— Lebanon Valley College.	78.	83.		...	...	...	8	13	10	NW	NW	SW	Geo. W. Bowman, A. M., Ph. D.
Lehigh.	Coopersburg,			2.88	...	...	12	11	5	15	SE	SW	SE	M. H. Boye.
Luzerne.	Drifton— Drifton Hospital.			1.94	2.75	...	6	...	...	...	NW	NW	NW	H. D. Miller, M. D.
Lycoming.*	Nisbet,			3.50	...	...	...	...	...	...	...	...	...	John S. Gibson, P. M.
Mercer,*	Greenville— Thiel College,	92.0	32.8	4.58	11.00	...	20	1	8	22	SW	...	S	Prof. S. H. Miller.
Mifflin,	Lewistown,	79.0	31.9	2.49	1.35	...	16	6	7	18	NW	NW	NW	Culbertson & Lantz.
Montgomery.	Pottstown,	80.0	34.0	2.35	...	...	6	9	13	9	W	W	W	Charles Moore, D. D. S.
Northampton.	Bethlehem,	79.0	33.0	2.29	1.00	...	8	16	2	13	NW	NW	NW	Lerch & Rice.
Perry,	New Bloomfield,	...		1.47	...	...	10	7	12	12	W	SW	W	Frank Mortimer.
Philadelphia,*	Philadelphia— Signal Office,	67.6	30.2	83	...	...	11	7	9	15	W	W	W	Luther M. Dey, Sgt. Sig. Corps.
Potter.	Coudersport,			...	...	...	...	...	...	...	...	...	...	C. L. Peck.
Schuylkill.	Girardville,	...		2.94	·50	...	17	11	8	12	NW	NW	NW	E. C. Wagner.
Snyder.	Selinsgrove (23 days),	86.0	31.3	1.02	...	...	...	...	...	...	SW	SW	SW	J. M. Boyer.
Somerset.	Somerset,	87.8	32.	5.60	7.00	...	14	9	0	22	SW	SW	SW	W. M. Schrock.
Sullivan.	Eagles Mere,	82.5	26.	57	8.25	...	15	5	8	18	SW	SW	SW	E. S. Chase.
Tioga,	Wellsboro',	81.5	29.	98	3.00	...	17	6	12	13	S	S	S	H. D. Deming.
Union.*	Lewisburg,			92	.20	...	10	3	15	13	SW	SW	SW	F. O. Whitman.
Warren.	Columbus,	...	...	5.07	10.00	...	21	4	3	24	SW	SW	SW	Wm. Loveland.
Washington.	Canonsburg,	73.5	31.0	5.10	.75	...	22	6	5	20	W	W	W	A. L. Runion, M. D.
Wayne.	Honesdale,	75.0	30.	3.29	10.00	...	...	...	...	...	...	...	...	John Torrey.
Westmoreland.	Greensburg,				...	...	...	...	...	...	...	...	...	Hilary S. Brunot.
Wyoming.*	South Eaton,	...	...	60	2.00	...	15	10	4	17	S	S	S	Benj. M. Hall.
York.*	York,	79.7	31.1	84	...	...	11	12	8	11	NW	NW	NW	Mrs. L. H. Greenwald.

*Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

PRECIPITATION FOR JANUARY, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro'.	Harrisburg.
1.	.46	.50	...	.72	.16	...	...	...	.11	...	.40	.55	...	.05	.12	...	.09	.15	...	.17	.28	.27	.14	.10	.12
2.	.19	.15	.75	.13	.05	...	...	...	.07	...	.03	.04	...	.20	...	.13	...	...	.04	.04	.02	.01	.02	.05	.05
3.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4.	...	...	...	...	.05	.12	...	...	.04	...	...	...	...	...	...	.04	.01	...	...	...	...	...	...	...	...
5.	.32	.05	.59	.84	.22	.24	...	...	.56	.25	.41	.40	...	.33	.14	.22	.21	.16	...	.11	.26	.24	.14	.10	.18
6.	.70	.65	.42	.55	.36	1.21	...	...	.24	1.37	.45	.37	...	.15	.09	.07	.12	.08	...	...	.01	.10	...	.06	...
7.	...	.02	...	...	.40	.90	2.00	...	.34	.42	.04	.05	...	.05	.11	.10	.06	...	...	.21	...	.04	.05	...	.04
8.	.10	.02	...	.02	.10	.13	...	...	.05	.05	.05	...	...	.05	...	.03	.05	.02	...	...	...	...	.03	.08	.02
9.	.04	...	...	...	...	...	...	...	.02	...	...	...	...	.02	...	...	...	...	...	...	...	...	...	...	...
10.	.18	.20	.15	.14	.20	.25	.20	...	.24	.50	.14	...	...	.02	...	.01	.07	...	...	.02	...	.01	.03	.05	.02
11.	.48	.08	.17	.44	.03	.07	.19	...	.11	...	.23	.48	...	.04	.06	.04	.05	...	...	.02	.01	.11	.04	.16	.08
12.	.07	.37	.09	.07	.15	.03	.38	...	.01	...	.45	.08	...	.10	...	.03	.01	...	...	.12	...	.31	...	.05	.01
13.	.07	.05	...	...	.02	.02	...	...	.01	...	.06	.05	...	.10	...	.06	.06	.02	...	.03	...	.03	...	.08	...
14.	...	...	...	.02	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15.	.30	.25	.90	.30	1.15	1.60	1.30	...	1.54	1.45	.95	.56	...	.75	1.30	1.37	1.27	1.05	1.07	1.17	.90	.73	.60	.26	1.02
16.	.50	1.30	.52	.53	.50	.45	.80	...	.32	.10	.28	.40	...	.25	.43	.30	.44	.23	.14	.33	.02	.55	...	.10	.14
17.	.08	...	.05	.04	...	...	...	...	...	.10	...	...	...	.02	...	...	...	...	...	...	...	...	...	...	...
18.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19.	...	...	.07	...	.08	...	...	...	.07	.15	...	...	...	...	...	...	.03	...	...	.03	...	.02	...	...	...
20.	.28	.40	.19	.48	.49	.60	.67	...	.54	.45	.50	.39	...	.30	.39	.31	.37	.37	.30	.26	.21	.30	.17	.36	.14
21.	.12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.05	.14
22.	.08	...	.05	.05	...	...	...	...	...	...	.03	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23.	.17	.05	.03	.10	.04	...	.10	...	.04	.15	.06	.05	...	.05	...	.04	.04	...	...	...	.01	...	...	.10	.01
24.	.08	...	.12	.05	...	...	...	...	.07	.15	.08	...	...	...	...	.04	...	...	...	...	...	...	...	...	...
25.	...	...	...	...	...	...	...	...	.01	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26.	...	...	.10	.06	...	...	.14	...	.02	.05	.03	...	...	...	...	...	...	...	...	...	...	.16	...	...	...
27.	.08	...	.07	.17	...	...	.09	...	.34	...	.05	.24	...	...	...	.12	.09	.06	...	.06	.02	.06	...	.20	.04
28.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29.	.08	...	.28	.20	.13	...	.50	...	.05	...	.07	...	...	...	.01	.03	.07	...	.25	.09	...	.02	...	.10	...
30.	.06	.45	.03	.08	.05	.48	...	...	.15	.40	.10	.13	...	.17	...	.06	...	.03	...	.12	.10	.18	.25	.08	.14
31.	.06	...	...	.08	...	...	...	...	.02	...	...	.01	...	...	...	...	...	...	...	...	...	...	...	...	...
	4.50	4.54	4.58	5.07	4.18	6.10	6.87	...	4.97	5.60	4.41	3.80	...	2.65	2.65	3.00	3.04	2.17	1.80	2.78	1.84	3.14	1.47	1.98	2.15

PRECIPITATION FOR JANUARY, 1890—*Continued.*

	Selinsgrove.	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Reading.	Pottstown.	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.
1.			07	34	.20	.04	.03	.13	.09	.05		.10	.07	.11	.07	.08	.16	.08	.11		.02	.10	.05	.06	.04
2.			.09	.42		.07	.07	.16		.06		.04		.04	.01			.02	.01						
3.																									
4.																									
5.			.06	.11	.21	.06	.12	.22	.11	.01		.19	.26	.37	.34	.40	.11	.05	.27	.28	.27	.12	.26	.25	.27
6.			03	.22		.05		.10	.22	.04				.06	.01	.06	.11	.03	.01	.01	.01			.01	
7.				.51	.09		.08	.13		.05		.07		.07	.05	.02			.07	.07	.09	.25	.07	.04	.06
8			.02	.03										.03	.01		.09	.03			.02			.05	
9.			.07							.01						.09									
10.						.09	.05	.11	.08	.04				.15	.11		.09	.12	.12	.05	.07	.08	.02	.04	.05
11.			.18	.18		.26	.08	.09	.15	.22				.05	.01		45	.36	.03						
12.			.03	.21	.03					.02								.02	.02						
13.			.05			.02		.03	.06	.02					.01			.03	.09						.03
14.						.21																		.07	
15.			.28	.43	1.16	.42	.57	1.09	.80	.42		1.61	1.20	.63	.98	.67	.34	.65	1.38	.50	.31	1.55	1.32	1.54	1.40
16.			.42	.68	.19		.60	.32	.20	.24		.26	.25	.21	.31	.20	.50	.12	.36	.26	.32	.38	.28		.34
17.																									
18.																									
19.					.01	.03		.13																	
20.			.10	.56	.32		.16	.09	.13			.47	.20	.51	.40	.46	.22	.14	.25	.38	.37		.31	.21	.24
21.																									
22.																									
23.			.02	.21		.05	.05	.01	.04					.05	.01		.12	.09			.01		.03		.02
24.			.05	.30	.02			.01		.01															
25.																									
26.				.02		.37	.08	.09																	
27.			.21	.35	.02		07		.09	.31						.02	.44	.48	.05				.02		.04
28.																									
29.						.32	.10	.10																	
30.			.33		.34			.13		.10		.31	.37	.32	.35	.37	.09	.07	.42	.32	.34	.46	.32	.42	.44
31.																	.02							.01	
	. . .	. . .	2.01	4.57	2.59	1.99	2.06	2.94	1.97	1.60	. . .	3.05	2.35	2.60	2.67	2.37	2.74	2.29	3.19	1.87	1.83	2.94	2.68	2.70	2.93

PRECIPITATION FOR JANUARY, 1890—*Continued.*

	Doylestown.	Lansdale	Forks of Neshaminy.	Germantown	Point Pleasant.	Bethlehem	Canonsburg	Carlisle	Centre Valley.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown	Greensburg.	Tipton	Coudersport.	Coopersburg.
1.						.06	.17	.08	.11	.15		.10	.20	.10	05		.90	.12	.12		.22		.13
2.						.01	.04	04			.20	.09	.07					.02					
3.					01																		
4.							.18														.20		
5.	.28	.32	.25	28	25	.20	.08	.22	20	.19	.40			.20	.11		1.10	.31	.12		.26		.26
6.							.62				.50			.20	06		1.20		.03		.13		
7.	.07	.05	.06		.06	.05	58	.06	.11	.29		.12		.10	.12			.14	.05		.11		.10
8.							.10	.04			25		.18		.08		.25	.07	.02		.02		
9.							.08												.05				
10.	.04	.05	.06		.02	.04	08	.10	.04		.20		.09					.12			.01		.04
11							.16	.05	01	.11	.15	.10	.09	.20	01			.07	.04		.07		.02
12.							.09	02			.10			.10			.20		.01		.04		
13.	.01	03	.06	.07			.03		.04								.30				.04		.02
14.	.15																						
15.	.18	.50	.95		1 23	1.38	1 65	08	1.27	.83	.12	1.10	1.03	.70	09		1.20	.74	1 22		1.59		1.31
16.		.70	.22	1.30	.22		33	13	.12	.13	.30	.01	.47	.40	.10		.20	.10	.27		.07		.34
17.																							
18.																							
19.							20								.03						.14		
20.	.34	.32	.33	.30	.24	.24	.09		.18	.22	.40	.24	.24	.20	.14		.50	.24	28		.49		.22
21.											.40												
22.																	.05		.02				
23.					.01		.04	01	.04		.10	.02		.80	.05		10	.01	.04		.01		
24.									.02										.01				
25.							.02																
26.							.15																02
27.	.03		.02		.02		.02	09	.04			.07	.15	.20				.04					04
28.																							
29.						.31	.25				.30				.08			.02			12		
30.	.45	.32	.45	.25	.38			.24	.27	.17	.30	.07	.34	.30				.25	.09				38
31.							.05																
	1.55	2.29	2.40	2.20	2.44	2.29	5.01	2.16	2.45	2.09	3.72	1.92	2.86	3.50	1.52	2.30	6.00	2.25	2.49	. . .	3.52	. . .	2.88

FOR FEBRUARY, 1890.

TEMPERATURE.

The mean temperature of 64 stations for February, 1890, was 37°.1, which is about 8° above the normal, and 14° above the corresponding month of 1889. The mean of the daily maximum and minimun temperature 45°.7 and 28°.2 give an average daily range of 17°.5, and a monthly mean of 37°.0.

Highest monthly means, 42°.1 at Uniontown, and 41°.4 at Philadelphia.

Lowest monthly means, 30°.2 at Dyberry, and 32°.2 at Le Roy.

Highest and lowest temperature recorded during the month, 79°.0 at New Bloomfield, on the 26th, and zero at Dyberry, on the 23d.

Greatest local monthly range, 24°.7 at Phillipsburg.

Least local monthly range, 11°.1 at Swarthmore.

Greatest daily range, 42° at Dyberry and Honesdale on the 23d.

Least daily range, 2° at Le Roy, 19th; Rimersburg, 15th; Annville, 4th, and Columbus, 12th.

BAROMETER.

The mean pressure for the month was 30.10, which is nearly normal.

The highest observed was 30.606 at Philadelphia on the 7th, and the lowest 29.485, on the 14th, at Greenville.

PRECIPITATION.

The average rainfall (including melted snow) was 4.32 inches for 26 stations. This is nearly normal, and the distribution was evenly divided.

While the snowfall was light, it was greater during February than in any of the past winter months. Several stations report snow on the 1st, 2d, 7th, 8th, 10th, 11th, 19th, 20th, 21st and 22d. The average total depth for 54 stations was 5.56 inches. Owing to the warm weather, it remained on the ground but a short time.

WIND AND WEATHER.

The prevailing wind was from the west.

The weather was unusually warm, and all early vegetation was brought forward to a very advanced stage. Winter grain is reported in an excellent condition and uninjured by frosts.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for February, 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Lowest.	Date.
Adams,*	Gettysburg,	624	....	....	....	37.8	72.0	18	19.0	7, 10	46.7	29.0	17.7	33.0	13	3.0	28
Allegheny,*	Pittsburgh,	847	30.080	30.460	29.560	42.0	68.0	4	16.0	21	50.4	33.4	17.0	31.0	11	7.0	9
Bedford,	Charlesville,	1,300	....	....	....	36.6	67.0	26	6.0	10	48.4	25.4	23.0	40.0	4	5.0	2
Berks,*	Reading,	304	30.162	30.571	29.732	37.2	57.0	19	17.0	7	45.6	28.9	16.7	37.0	18	8.0	4
Blair,†	Altoona,	1,181	....	....	....	41.6	66.0	19	15.0	10	49.8	33.5	16.3	30.0	18	8.0	24
Bradford,	Wysox,	718	30.113	30.574	29.549	34.2	63.0	5	9.8	7	42.8	23.6	19.2	33.0	5	4.5	19
Bucks,	Quakertown,	536	30.130	30.580	29.570	36.4	69.2	18	14.7	7	46.3	27.9	18.4	32.0	5	7.0	28
Cambria,*	Johnstown,	1,184	30.142	30.570	29.570	40.4	67.0	5, 26	12.0	10	51.0	30.0	21.0	33.0	13	8.0	9
Cameron,	Emporium,	1,030	....	....	....	36.1	65.0	5	7.0	10	46.3	24.7	21.6	32.0	5	6.8	9
Carbon,*	Mauch Chunk,	550	....	....	....	36.0	67.0	18	14.0	7	45.0	27.0	18.0	35.5	18	6.0	28
Centre,	State College—Agricultural Experiment Station,	1,191	30.059	30.548	29.501	35.4	69.0	4	10.0	9	44.0	26.3	17.7	38.0	5	7.0	28
Chester,	West Chester,	455	30.133	30.580	29.534	39.0	69.0	18	18.0	7	47.8	31.1	16.7	27.0	5	6.5	24
Clarion,	Clarion—State Normal School,	1,530	....	....	....	34.8	62.0	5	8.0	10	44.4	24.8	19.6	36.0	5	8.0	9
Clearfield,	Grampian Hills,	1,450	....	....	....	33.9	60.0	18, 25	12.0	10, 29	42.0	26.5	15.5	34.0	13	4.0	14
Clinton,	Lock Haven,	560	....	....	....	35.6	68.0	18	12.0	11	43.2	26.1	17.1	35.0	18	6.0	28
Columbia,	Catawissa,	491	....	....	....	38.0	67.0	5	18.0	7	44.5	31.5	13.0	...	...	...	...
Cumberland,	Carlisle,	480	....	....	....	37.7	72.0	18	19.0	10	46.3	29.7	16.6	30.0	18	5.0	2
Dauphin,*	Harrisburg,	361	30.130	30.595	29.592	37.6	74.0	5	18.0	7	44.6	30.7	13.9	36.0	5	4.0	15
Delaware,	Swarthmore—Swarthmore College,	100	30.090	30.527	29.695	40.2	68.5	18	21.0	7, 21	44.2	33.1	11.1	27.8	5	6.0	1
Erie,*	Erie,	681	30.060	30.510	29.580	35.0	67.0	4	14.0	21	43.0	27.0	16.0	32.0	4	5.0	6
Fayette,	Uniontown,	1,000	30.098	30.473	29.543	42.1	66.0	4, 18	19.0	22	...	...	...	...	...	...	...
Forest,	Tionesta,	1,057	....	....	....	....	....	....	....	....	...	...	...	...	...	...	...
Franklin,	Chambersburg—Wilson Female College,	618	30.161	30.542	29.733	37.9	72.0	18	15.0	10	48.2	27.7	20.5	36.0	18	9.0	8
Fulton,	McConnellsburg,	875	....	....	....	39.2	71.0	18	16.1	10	49.0	29.2	19.8	33.0	18	9.0	28
Greene,	Waynesburg,	750	....	....	....	40.5	66.0	5, 18	....	....	...	...	...	...	...	...	...
Huntingdon,*	Huntingdon—The Normal College,	650	....	....	....	37.7	68.5	18	7.5	10	48.5	26.9	21.6	31.5	13	9.5	2
Indiana,	Indiana, State Normal School,	1,350	30.098	30.488	29.644	38.5	64.0	4, 25	11.0	21	47.2	31.1	16.1	36.5	5	7.5	1
Lancaster,	Lancaster,	413	30.108	30.580	29.682	38.8	69.5	18	15.0	21	47.9	26.9	21.0	33.0	19	12.0	9
Lawrence,	New Castle,	962	....	....	....	40.9	65.0	4, 25	12.0	21	48.8	29.1	19.7	34.5	28	7.0	7

Lebanon.	**Annville—**																
	Lebanon Valley College,	339	. . . .	. . . .	. . . .	39.5	75.0	26	19.0	7	. . .	. . .	. . .	36.0	18	2.0	4
Lehigh,	Coopersburg,	520	. . . .	. . . .	. . . .	37.2	68.0	18	17.0	7.21	48.6	29.4	19.2	37.0	5	8.0	28
Luzerne,	Drifton—																
	Drifton Hospital,	1,655	. . . .	. . . .	. . . .	33.6	63.0	18	11.0	7	42.7	25.5	17.2	28.0	5	7.0	1
Lycoming,*	Nisbet,	550	. . . .	. . . .	. . . .	35.7	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mercer,*	Greenville—																
	Thiel College,	1,000	30.031	30.471	29.485	35.8	63.5	5	12.1	21	45.0	26.6	18.4	36.5	5	6.0	3
Mifflin,	Lewistown,	500	. . . .	. . . .	. . . .	37.9	71.5	18	15.5	10	48.1	28.2	19.9	36.0	18	10.0	4
Montgomery,	Pottstown,	150	. . . .	. . . .	. . . .	39.8	71.0	18	19.0	7	48.0	33.4	14.6	30.0	18	7.0	28
Northampton,	Bethlehem,	360	30.065	30.511	29.534	40.0	68.0	18, 19	17.0	7	47.0	30.5	16.5	36.5	18	7.0	28
Perry,	New Bloomfield,	400	. . . .	. . . .	. . . .	36.7	79.0	26	16.0	7	43.9	29.5	14.4	39.0	26	4.0	27
Philadelphia,*	Philadelphia—																
	Signal Office,	117	30.132	30.606	29.608	41.4	69.0	18, 26	21.0	7, 21	49.0	33.9	15.1	26.0	8	7.6	19
Potter,	Coudersport,	1,670	. . . .	. . . .	. . . .	34.3	60.0	26	1.0	11	41.3	25.4	15.9	34.0	11	7.0	15
Schuylkill,	Girardville,	1,000	30.114	30.445	29.669	35.8	64.0	18	15.0	15	43.0	27.0	16.0	27.0	16	8.0	24
Snyder,	Selinsgrove,	445	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Somerset,	Somerset,	2,250	. . . .	. . . .	. . . .	36.8	65.0	4	10.0	10, 21	46.4	28.9	17.5	34.0	5	6.0	14
Sullivan,	Eagles Mere,	2,060	30.149	30.632	29.551	30.4	55.0	26	8.0	21	35.6	22.5	13.1	27.0	5	4.0	28
Tioga,	Wellsboro',	1,327	30.056	30.535	29.493	33.8	62.0	18	4.0	11	42.9	25.7	17.2	40.0	13	5.0	28
Union,*	Lewisburg,	450	. . . .	. . . .	. . . .	36.9	66.0	18	16.0	7	44.9	29.0	15.9	32.0	18	8.0	28
Warren,	Columbus,	1,410	. . . .	. . . .	. . . .	33.9	62.0	24	2.0	11	42.1	25.7	16.4	30.0	11	2.0	12
Washington,	Canonsburg,	950	. . . .	. . . .	. . . .	39.0	68.0	5	13.0	10	51.3	28.5	22.8	40.0	11	10.0	3
Wayne,	Honesdale,	1,000	. . . .	. . . .	. . . .	33.2	59.0	26	3.0	23	41.4	25.0	16.4	42.0	23	4.0	6
Westmoreland,	Greensburg (26 days),	1,175	. . . .	. . . .	. . . .	42.5	68.0	25	15.5	22	52.4	31.7	20.7	32.0	13	8.0	9
Wyoming,*	South Eaton,	660	. . . .	. . . .	. . . .	34.8	68.0	18	9.0	7	43.6	26.1	17.5	32.0	19	7.0	28
York,*	York,	385	30.055	30.373	29.620	39.1	69.5	26	19.0	7	48.2	30.1	18.1	33.5	26	11.0	34

* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATIONS.	Relative humidity.	Dew point.	PRECIPITATION.				NUMBER OF DAYS.			WIND.			OBSERVERS.
											PREVAILING DIRECTION.			
				Total inches.	Total snowfall during month.	Depth of snow on ground at end of month.	Number of days rainfall.	Clear.	Fair.	Cloudy.	7 a. m.	2 p. m.	9 p. m.	
Adams,*	Gettysburg,	...	...	4.51	11.50	....	13	11	5	12	N	SW	SW	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	78.5	35.0	5.52	2.25	....	15	5	5	18	N	N	N	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	81.9	31.5	2.81	2.00	....	12	8	8	12	W	W	W	Miss E. A. G. Apple.
Berks,*	Reading,	94.3	33.7	4.05	2.50	....	8	12	4	12	NW	NW	NW	C. M. Dechant, C. E.
Blair,†	Altoona,	67.1	30.0	4.09	....	....	12	...	...	...	...	...	...	Dr. Charles B. Dudley.
Bradford,	Wysox,	77.7	27.8	2.46	2.00	....	10	5	6	17	SE	SW	SE	Charles Beecher.
Bucks,	Quakertown,	90.0	29.9	5.18	1.50	....	13	3	13	11	NE	NE	NE	J. L. Heacock.
Cambria,*	Johnstown,	83.4	33.4	5.05	7.05	....	18	6	4	18	NW	NW	NW	E. C. Lorentz.
Cameron,	Emporium,	...	...	5.02	8.00	....	12	5	7	16	W	W	W	T. B. Lloyd.
Carbon,*	Mauch Chunk,	...	...	5.36	3.00	....	10	16	5	7	NW	NW	NW	John J. Boyd.
Centre,	State College—													
	Agricultural Experiment Station,	85.2	31.5	4.31	4.65	....	10	6	8	14	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	72.0	30.0	5.41	3.00	....	15	9	5	14	NW	NW	NW	Jesse C. Green, D. D. S.*
Clarion,	Clarion													
	State Normal School,	86.1	31.0	4.78	6.95	....	11	5	6	16	W	W	W	C. M. Thomas, B. S.
Clearfield,	Grampian Hills,	...	...	5.52	9.00	....	16	3	11	14	W	SW	W	Nathan Moore.
Clinton,	Lock Haven,	...	...	4.04	6.10	....	11	5	6	17	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,	...	...	3.41	9.00	....	11	...	...	...	...	...	...	Robert M. Graham.
Cumberland,	Carlisle,	84.5	33.0	4.12	6.00	....	9	5	9	14	NE	W	W	J. E. Pague.
Dauphin,*	Harrisburg,	77.4	30.6	3.39	....	....	11	3	12	13	NW	NW	NW	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore—													
	Swarthmore College,	80.0	34.0	3.93	1.00	....	9	2	8	18	NW	NW	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	84.0	29.0	3.60	....	....	17	5	5	18	S	S	S	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	...	...	4.73	2.00	....	10	6	15	7	...	...	...	Wm. Hunt.
Forest,	Tionesta,	...	...	...	....	....	...	...	...	...	...	...	...	R. L. Haslet.
Franklin,	Chambersburg—													
	Wilson Female College,	86.2	28.0	3.90	6.50	....	11	12	3	13	...	...	...	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	78.6	32.8	4.00	4.50	....	10	9	8	11	W	W	W	Thomas F. Sloan.
Greene,	Waynesburg,	...	...	5.10	....	....	11	...	...	...	...	...	...	Capt. W. C. Kimber.
Huntingdon,*	Huntingdon—													
	The Normal College,	...	...	5.18	....	....	15	4	13	11	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana—													
	State Normal School,	79.8	32.6	5.89	3.00	....	12	5	9	14	NW	W	SW	Prof. S. C. Schmucker.
Lancaster,	Lancaster,	80.0	32.7	3.14	3.00	....	10	3	10	15	NW	NW	SE	E. E. Weller.
Lawrence,	New Castle,	...	...	6.39	5.37	....	11	7	5	16	W	W	W	Wm. T. Butz.

Lebanon,	Annville— Lebanon Valley College,	84.	35.2	...	....	....	..	1	12	15	E	E	E	Geo. W. Bowman, A. M., Ph. D.
Lehigh,	Coopersburg,			5.32	1.50	....	10	10	5	13	NW	NW	NE	M. H. Boyle.
Luzerne,	Drifton— Drifton Hospital,			3.60	6.00	....	8			16	NW	NW	NW	H. D. Miller, M.D.
Lycoming,*	Nisbet,			3.70	....	....								John S. Gibson, P. M.
Mercer,*	Greenville— Thiel College,	89.1	30.9	5.05	5.00	....	13			20	S	...	SW	Prof. S. H. Miller.
Mifflin,	Lewistown,	77.8	31.3	4.16	5.30	....	14			14	NW	NW	NW	Culbertson & Lantz.
Montgomery,	Pottstown,	75.6	34.0	4.81	2.00	....	8	9	8	14	NE	NE	NE	Charles Moore, D.D. S.
Northampton,	Bethlehem,	78.0	33.0	4.67	2.00	....	11	15		11	NW	N	NE	Lerch & Rice.
Perry,	New Bloomfield,			6.11	4.70	....	8	9		12	NW	W	W	Frank Mortimer.
Philadelphia.*	Philadelphia— Signal Office,	74.0	31.4	3.39	....	....	13		5	16	NE	NE	NE	Luther M. Dey, Sgt. Sig. Corps.
Potter,	Coudersport,	89.5	29.3	5.90	8.00	....	11		...		NW	...	W	C. L. Peck.
Schuylkill,	Girardville,			4.56	6.00	....	11	4	15	9	W	NW	W	E. C. Wagner.
Snyder,	Selinsgrove,	...	...		....	....			...		...	...	...	J. M. Boyer.
Somerset,	Somerset,	82.1	32.5	4.51	8.00	....			10		SW	SW	SW	W. M. Schrock.
Sullivan,	Eagles Mere,	77.8	24.0	6.20	13.50	....			12		SW	SW	SW	E. S. Chase.
Tioga,	Wellsboro',	74.5	26.0	2.28	11.50	....	14		12	13	S	SW	S	H. C. Deming.
Union,*	Lewisburg,			3.89	3.40	....	8	1	15	12	NE	...	SW	F. O. Whitman.
Warren,	Columbus,	...	...	4.68	6.00	....	18	3	6	10	SW	SW	SW	Wm. Loveland.
Washington,	Canonsburg,	77.2	32.3	5.55	2.25	....	14		9	13	W	W	W	A. L. Runion, M.D.
Wayne,	Honesdale,	72.8	29.6	3.19	8.00	....	10	.	.	...	.	.	.	John Torrey.
Westmoreland,	Greensburg (26 days),	76.2	35.	4.41	2.00	....	12	2	8	16	W	W	W	Hilary S. Brunot.
Wyoming,*	South Eaton,	..		3.09	7.00	....	8	9	6	13	S	S	S	Benj. M. Hall.
York,*	York,	79.5	31.5	2.85	1.50	....	14			13	NW		SW	Mrs. L. H. Grenewald.

*Observations taken at 8 a. m. and 8 p. m.   †Observations taken at 12 noon.

PRECIPITATION FOR FEBRUARY, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro'.	Harrisburg.
1.		.63			.04			.01	.07				.30						.35		.03				
2.		.65		.02	.02	.28	.02		.05		.05		.30	.01	.12	.17	.29	.01			.23	102	.03	.01	.22
3.	.01			.03	.05	.42	.08	.07	.02	.30	.06	.07	.05	.08		.07	.07		.20	.05	.01	.09			.03
4.	.14	.47	.40	.13	.87		.50	.83	.59	.35	.65	.50	.09	.55	.73	.57	.59	.57	.30	.65	.08	.70	2.47	.10	.27
5.																.02		.01							
6.	.01																								
7.	.12	.10	.47	.40	1.25	[illegible]	.50	.40	.80	.85	.70		1.40			.46	.68			.20	.08			.54	.09
8.	.41	1.40	.61	.36	.40	.77	.12	1.00	.60	.15	.80	1.60	.80	1.23	.74	.63		1.04	.46	.93	.92	.06	1.00	.25	.01
9.		.02		.01						.20	.02	.20		.01											
10.																									
11.																									
12.																									
13.																									
14.	1.19	.93	1.10	1.00	.52	.77	1.00	.23	.32	.60	.44	.68	.08	.85	.72	.78	.50	.27	1.06	.77	.75	1.32	.75	.46	.64
15.	.18		.12	.05	.12	.30	.05	.10	10			.05	.20	.02				.23		.02					
16.																									
17.				.01																		.01		.08	
18.	.18		.05	.06					.02		.12	.07				.63	.14	.03							
19.	.01	.72		.02	.02				.02				.02			.06	1.00				.10				
20.	.21		.49	.63	.68	1.16	1.05	1.17	.88	1.30	1.32	75	.29	1.10	1.33	1.25		.85	.70	.68	.42	.02	.82	.27	.58
21.	.02		.16	.06	.03			.10	.01		.10			.10											
22.	.01			.02					.02			.55													
23.																								.04	
24.	.01	.30	.10	.01	.88	.10	.24	.90	.88	.11	.30	.25	.07	.42	.66	.02	.72	.57	.30	.48	.01	1.10	.44	.15	.13
25.	.78	.85	1.14	1.32	.38		.73	.73	.14		.38	.39	.02	.17	.22	.16	.25	.14	.06	.25	.10	.03	.10	.10	.04
26.	.04		.05	.03	.02	.05			.07			.13	.01	.20	.05	.02	.06	07	.08		.05	.19		.05	
27.	.02		.01													.02			.04		.01			.03	.02
28.	.26	.32	.35	.52	.24	.10	.49	.35	.41	.65	.58	.42	.03	.40	.41	.32	.46	.30	.35	.28	.06	.50	.50	.20	.46
29.																									
30.																									
31.																									
	3.60	6.39	5.05	4.68	5.52	4.73	4.78	5.89	5.05	4.51	5.52	5.02	3.06	5.14	4.98	5.18	4.76	1.09	3.90	4.31	2.85	4.04	6.11	2.28	3.35

PRECIPITATION FOR FEBRUARY, 1890—*Continued.*

	Selinsgrove.	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Reading.	Pottstown.	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.
1.											.13														
2.		.15		.22	.19		.05	.06				.25	.35	.47	.35	.06		.07	.17	.10	.22	.09	.10	.06	.06
3.					.01	.02						.09		.08	.04	.23			.05	.12	.05		.05	.04	.05
4.		.19	.05	.48	.26		.48	.48	.17	.11	.48	.24	.18	.09	.07	.06	.27	.25	.24	.08	.05	.35	.17	.26	.24
5.				.15										.02		.02			.02		.01				
6.																									
7.			.10	.46	.05	.53	.40	.32		.02	.24			.07	.09		.20	.12							
8.		1.05	1.13	.68	1.32	.35	.43	.98	.75	1.21	.90	1.38	1.83	1.82	1.82	2.04	.94	.58	2.38	1.60	1.15	1.72	2.00	2.00	1.84
9.																									
10.																									
11.																									
12.																									
13.																									
14.		.57	.54	.97	.57	.56	.76	1.19	.72	.77	.76	.95	.80	.88	.90	.68	.68	.61	.81	.57	.34	.95	.71	.55	.54
15.														.03											
16.																									
17.						.10																			
18.			.13				.20		.01				.10				.13	.11	.01						
19.		.03				.38	.29	.15						.05	.06	.03				.04	.03		.02		.05
20.		.53	.48	.48	.45			.15	.55	.54	.36	.75	.80	.89	.86	.85	.57	.66	.77	.81	.74	.63	.66	.85	.78
21.				.22																					
22.																									
23.				.01																					
24.		.27	.15	1.08	.50	.20	.28	.66	.36	.14	.46	.24	.35	.41	.30	.36	.30	.33	.30	.36	.39	.27	.30	.27	.27
25.		.05	.26	.35		.18	.12	.12	.08	.06				.13	.06	.08	.21	.14	.09		.15		.04	.06	.03
26.									.08					.02		.01	.04		.03		.03				.02
27.		.03		.08		.12	.04	.07						.05	.02						.01				
28.		.27	.12	1.02	.43	.02	.36	.38	.28	.24	.27	.15	.40	.40	.31	.27	.40	.32	.31	.30	.22	.38	.30	.52	.50
29.																									
30.																									
31.																									
	. . .	3.14	2.96	6.20	3.78	2.46	3.41	4.56	3.00	3.09	3.60	4.05	4.81	5.41	4.88	4.74	3.74	3.19	5.18	3.93	3.39	4.39	4.35	4.61	4.38

PRECIPITATION FOR FEBRUARY, 1890—*Continued.*

	Doylestown.	Lansdale.	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	Centre Valley.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown.	Greensburg.	Tipton.	Coudersport.	Coopersburg.	Hulmeville.	Westtown.
1.						.04	.10				.15				.12			.10		.05				.10	
2.	.18		.13		.05		.03	.28	.13	.64		.15	.20	.20	.08			.90	.16				.12	.10	.30
3.			.06	.24	.05	.11	.06	.06		.04	.40		.11		.41			.08	.03			.10	.05	.08	
4.	18		.14		.23	.32	.35	.34	.25	.26	.20	.51	.52	.60	.20			.19	.66	.65		.10	.28		
5.																						.30			
6.																									
7.			.02		.01	.71	1.00	.31	.08						.30			.10	.34	.05					
8.	75	1.94	1.82	1.45	1.70	1.00	.04	1.40	1.75	.64	1.80	.90	1.69	1.30	.10			.80	.51	.01		.80	2.18	1.17	
9.																									
10.																									
11.									.02																
12.																									
13.																									
14.	.59	.57	.65	.48	.57	.86	.63		.38	.90	.40	.87	1.22	.90				.89	.77	1.95		1.50	.98	.55	.76
							.15				.20									.28		.10			
									.08	.05			.01		.02				.01						
	.15	10	.07		35	.54	.11				.15				.26				.03	.01			.05		.02
	.75	75	.80	.73	.65		.61	.61	.36	.95	.85	.71	.45	.50	.81			.75	.52	.90		.40	.72	.95	.79
21.																									
22.																						.10			
23.														.20					.01						
24.	.25	.25	.26		.25	.32	.95	.44	.05	.25	.25	25	.55		.24			.22	.59	.01		.70	.30	.38	.28
25.			.02	.07	.03	.06	.28	.06	.01	.05	.20	.14	.03		.04			.02	.16	.15			.08		.05
26.																		.08		.02		1.50			
27.			.01			.47	.02		.03									.08	.04						
28.	.44	.67	.30		.84	.24	.32	.62	.20	.22	.50	.36	.58		.23			.30	.33	.33		.30	.56	.50	.19
29.																									
30.																									
31.																									
	4.29	4.28	4.28	2.97	4.73	4.67	5.56	4.12	3.34	4.00	5.10	3.89	5.36	3.70	2.81	5.00	. . .	4.51	4.16	4.41	. . .	5.90	5.32	3.83	2.39

FOR MARCH, 1890.

TEMPERATURE.

The mean temperature of 61 stations for March, 1890, was 33°.4, which is 5°.5 below that of the corresponding month of 1889, and 2°.5 below the normal.

The mean of the daily maximum and minimum temperatures 41°.7 and 24°.6 give an average daily range of 17°.1, and a monthly mean of 33°.1.

Highest monthly means, 38°.8 at Philadelphia.

Lowest monthly means, 26°.3 at Eagles Mere.

Highest temperatures recorded during the month, 76° on the 12th, at Coatesville, Lancaster, Centre Valley, Annville and Pottstown.

Lowest, minus 16°, at Blue Knob and Columbus, on the 7th.

Greatest local monthly range, 23°.5 at Charlesville.

Least local monthly range, 11°.9 at Rimersburg and Eagles Mere.

Greatest daily range, 59° at Charlesville on the 12th.

Least daily range, 1° at Petersburg on the 13th.

The warmest day of the month was on the 12th. On this day 23 stations recorded a temperature of over 70°.

The coldest day was on the 7th, when 29 stations recorded a temperature below zero.

BAROMETER.

The mean pressure for the month was 30.07, which is about .05 above the normal.

The highest observed was 30.67 at Johnstown on the 9th, and the lowest 29.17, at Greenville, on the 28th.

PRECIPITATION.

The average rainfall (including melted snow) was 5.15 inches which is an excess of two inches.

The largest totals reported were Quakertown, 8.31; Pottstown, 8.05; and Coopersburg, 7.92 inches. Considerable snow fell during the month. The average of 53 stations was 17.5 inches.

Stations reporting the largest total snowfall, in inches, were Blue Knob, 46; Eagles Mere, 49; Grampian Hills, 33; Wellsboro', 29; Le Roy, Quakertown, Phillipsburg and Dyberry, each 26 inches. Very little remained on the ground at the end of the month.

WIND AND WEATHER.

The prevailing wind was from the northwest. The weather was favorable for the growth of winter grain and grass.

Average number.—Rainy days, 16; clear days, 6; fair days, 10; cloudy days, 15.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for March, 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL. Mean.	Highest.	Lowest.	TEMPERATURE. Mean.	MAXIMUM. Highest.	Date.	MINIMUM. Lowest.	Date.	Mean of maximum.	Mean of minimum.	DAILY RANGE. Mean.	Greatest.	Date.	Least.	Date.
Adams,*	Gettysburg,	624	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Allegheny,*	Pittsburgh,	847	30.090	30.610	29.290	35.8	68.0	12	5.0	7	42.7	28.9	13.8	29.0	9	6.0	29
Bedford,	Charlesville (26 days),	1.300	...	...	...	34.0	74.0	12	-18.0	7	44.8	21.3	23.5	59.0	12	7.5	29
Berks,*	Reading,	304	30.125	30.657	29.679	35.5	75.0	12	9.0	9	44.8	26.2	18.6	39.0	12	8.0	21
Blair,†	Altoona,	1.181	...	...	...	37.9	68.0	13	2.0	7	47.4	28.4	19.0	38.0	7	11.0	11
Bradford.	Wysox,	718	30.088	30.613	29.447	30.3	64.5	12	- 4.5	8	38.4	21.3	17.1	39.5	10	5.5	14
Bucks,	Quakertown.	536	30.060	30.570	29.620	33.8	73.2	12	3.5	7	43.1	24.8	18.3	39.2	12	9.0	28
Cambria,*	Johnstown.	1.184	30.134	30.670	29.370	34.3	68.0	12	-- 4.5	7	43.3	25.4	17.9	39.0	9	7.0	30
Cameron.	Emporium.	1.030	...	...	...	33.3	57.0	21	-13.0	7	41.2	22.4	18.8	41.0	7	6.0	1
Carbon,*	Mauch Chunk.	550	...	...	...	34.0	72.0	12	6.5	7	42.6	25.4	17.2	36.0	12	6.0	11
Centre.	State College Agricultural Experiment Station.	1.191	30.028	30.597	29.418	31.0	64.0	12	-- 6.0	7	38.7	22.5	16.2	30.0	7	8.0	11
Chester.	West Chester.	455	30.040	30.589	29.296	36.1	73.0	12	5.0	7	45.0	28.2	16.8	25.0	12	7.0	31
Clarion.	Clarion— State Normal School (23 days).	1,530	...	...	...	28.2	59.0	12	—10.0	7	37.1	19.9	17.2	40.5	9	8.0	2
Clearfield.	Grampian Hills.	1.450	...	...	...	28.3	62.0	12	—14.0	7	36.0	21.6	14.4	40.0	7	4.0	13
Clinton.	Lock Haven.	560	...	...	...	32.9	51.0	12	—12.0	7	39.0	23.3	15.7	43.0	7	3.0	20
Columbia.	Catawissa.	491	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Crawford.	Meadville.	1.300	...	...	...	28.2	58.0	12	- 3.0	7	36.2	21.3	14.9	32.5	9	6.0	10
Cumberland.	Carlisle,	480	...	...	...	36.0	74.0	12	6.0	7	41.6	28.0	13.6	36.0	12	6.0	22
Dauphin,*	Harrisburg,	361	30.083	30.598	29.457	35.6	72.0	12	8.0	7	42.3	29.0	13.3	31.0	12	8.0	1
Delaware.	Swarthmore Swarthmore College.	190	30.089	30.518	29.686	37.6	72.0	12	8.0	7	47.0	30.6	16.4	29.4	20	3.9	14
Erie.*	Erie.	681	30.040	30.570	29.180	31.0	62.0	12	2.0	7	38.0	24.0	14.0	25.0	16	4.0	2
Fayette.	Uniontown.	1.000	...	...	...	37.3	74.0	12	10.0	7	43.1	29.2	13.9	38.0	7	3.0	5
Forest.	Tionesta.	1.057	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Franklin.*	Chambersburg— Wilson Female College.	618	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fulton.	McConnellsburg.	875	...	...	...	37.0	71.0	12, 13	3.0	7	45.7	27.0	18.7	37.0	7	4.0	22
Greene.	Waynesburg.	750	...	...	...	34.4	...	...	...	...	...	...	...	...	...	...	...
Huntingdon.*	Huntingdon The Normal College.	650	...	...	...	34.9	62.5	12	5.0	7	42.5	27.4	15.1	35.0	7	4.0	21
Indiana.	Indiana— State Normal School.	1.350	30.048	30.497	29.545	33.4	66.0	12	8.0	7	39.9	21.3	18.6	36.0	20	8.0	30
Lancaster.	Lancaster.	418	30.092	30.548	29.506	36.3	76.0	12	4.0	7	46.0	24.2	21.8	41.0	12	10.0	31

Lawrence.	New Castle.	982	....	....	....	34.1	65.0	25	3.0	8	40.6	23.	17.5	32.0	20	.0	19
Lebanon.	Annville— Lebanon Valley College.	339	....	....	....	37.7	77.0	12	6.0	7	....	....	....	33.0	12	2.	22
Lehigh.	Coopersburg.	520	....	....	....	34.9	73.0	12	5.0	7	46.9	26.7	20.2	38.0	12	10.	22
Luzerne.	Drifton— Drifton Hospital,	1,655	....	....	....	28.9	64.0	12	1.0	7	39.2	19.	19.5	34.0	21	8.	
Lycoming.*	Nisbet.	550	....	....	....	32.0	....	....	....	....	....						
Mercer.*	Greenville— Thiel College.	1,000	30.038	30.508	29.170	30.1	61.0	25	7.8	7	39.6	20.	19.	38.5	9	9.	30
Mifflin.	Lewistown.	500	....	....	....	....	....	....	....	....	....		....			....	
Montgomery.	Pottstown.	150	....	....	....	38.0	76.0	12	5.0	7	46.0	29.	17.0	35.0	12	5.0	23
Northampton.	Bethlehem.	360	30.018	30.465	29.431	36.0	71.0	12	2.0	7	44.0	27.	17.0	36.0	12	6.0	11
Perry.	New Bloomfield.	400	....	....	....	34.3	68.0	12	-1.0	7	40.	27.3	13.0	34.0	12	3.	29
Philadelphia.*	Philadelphia Signal Office.	117	30.070	30.580	29.310	38.8	73.0	12	9.0	7	46.2	31.	14.7	21.0	9	3.	14
Potter.	Coudersport.	1,670	....	....	....	27.3	55.0	13	-19.0	7	36.3	18.	18.0	42.0			3
Schuylkill.	Girardville.	1,000	30.061	30.554	29.526	33.4	67.0	12	5.0	7	42.	24.	17.9	30.0	21	10.	22
Snyder.	Selinsgrove.	445	....	....	....	....	....	....	....	....	....	....	....	....		....	....
Somerset.	Somerset.	2,250	....	....	....	38.0	65.0	12	-17.0	7	39.6	18.7	20.7	33.0	6	2.0	30
Sullivan.	Eagles Mere.	2,060	30.135	30.660	29.486	26.3	54.0	12	-3.0	7	31.8	19.9	11.9	26.0		2.0	26
Tioga.	Wellsboro'.	1,827	30.083	30.645	29.337	28.4	64.0	12	-9.0	8	36.7	21.	15.5	23.0		4.0	8
Union.*	Lewisburg.	450	....	....	....	34.5	61.0	12	2.0	7	43.1	26.	17.1	30.0	9	8.0	30
Warren.	Columbus.	1,410	....	....	....	28.8	58.0	12, 25	-16.0	7	37.3	20.	17.1	54.0	9	2.0	26
Washington.	Canonsburg.	950	30.088	30.425	29.522	33.0	67.0	12	-9.0	7	42.8	24.	18.	36.0	9	6.0	31
Wayne.	Honesdale.	1,000	....	....	....	30.4	64.0	12	-1.0	7	39.0	21.9	17.1	42.0	10	4.0	14
Westmoreland.	Greensburg.	1,175	....	....	....	35.1	69.0	12	-4.5	7	44.1	26.8	17.8	38.7	9	9.3	31
Wyoming.*	South Eaton.	660	....	....	....	31.3	65.0	12	5.0	8, 10	39.6	23.0	16.6	34.0	10	4.0	19
York.*	York.	385	30.012	30.539	29.429	35.8	75.0	12	4.0	7	47.5	26.6	20.9	37.0	12	9.0	31

*Observations taken at 8 A. M. and 8 P. M.

†Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued*.

COUNTY.	STATION.	Relative humidity.	Dew point	PRECIPITATION.				NUMBER OF DAYS.			WIND. PREVAILING DIRECTION.			OBSERVERS.
				Total inches.	Total snowfall during month.	Depth of snow on ground at end of month.	Number of days rainfall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Adams.*	Gettysburg.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	Prof. E. S. Breidenbaugh.
Allegheny.*	Pittsburgh.	83.6	30.2	3.86	. . .	. . .	22	2	10	19	N	N	N	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford.	Charlesville (26 days).	73.1	26.7	5.46	16.02	1.00	14	6	8	12	N	W	N	Miss E. A. G. Apple.
Berks.*	Reading.	. . .	. . .	4.88	. . .	. . .	11	8	10	13	NW	NW	NW	C. M. Dechant, C. E.
Blair.†	Altoona.	59.1	24.5	2.90	. . .	. . .	10	. . .	. . .	. . .	. . .	. . .	. . .	Dr. Charles B. Dudley.
Bradford.	Wysox.	74.9	20.6	3.38	9.25	. . .	17	6	6	19	W	SW	SW	Charles Beecher.
Bucks.	Quakertown.	79.3	27.1	8.31	26.00	1.00	16	6	11	14	NW	NW	NW	J. L. Heacock.
Cambria.*	Johnstown.	82.5	27.5	5.74	17.90	1.00	23	4	8	19	NW	NW	NW	E. C. Lorentz.
Cameron.	Emporium.	. . .	. . .	4.79	14.25	. . .	13	4	9	18	NW	W	W	T. B. Lloyd.
Carbon.*	Mauch Chunk.	. . .	. . .	6.07	19.00	. . .	15	7	16	8	NW	NW	NW	John J. Boyd.
Centre.	State College—Agricultural Experiment Station.	87.6	27.3	3.85	16.60	. . .	17	5	8	18	W	W	W	Prof. Wm. Frear.
Chester.	West Chester.	69.0	26.5	6.77	10.75	1.75	18	11	8	12	NW	NW	NW	Jesse C. Green, D.D.S.
Clarion.	Clarion—State Normal School (23 days).	. . .	. . .	3.98	11.70	. . .	12	3	8	12	W	W	W	C. M. Thomas, B.S.
Clearfield.	Grampian Hills.	. . .	. . .	6.32	33.00	4.00	21	3	7	21	W	W	W	Nathan Moore.
Clinton.	Lock Haven.	. . .	. . .	5.48	22.00	. . .	10	7	11	13	W	W	W	Prof. John A. Robb.
Columbia.	Catawissa.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	Robert M. Graham.
Crawford.	Meadville.	76.0	22.8	4.81	18.05	2.00	17	3	12	16	S	W	W	J. & B. H. Metcalf.
Cumberland.	Carlisle.	81.0	26.0	5.87	12.00	. . .	14	5	10	16	N	W	W	J. E. Pague.
Dauphin.*	Harrisburg.*	74.8	27.8	3.80	6.50	. . .	14	5	16	10	NW	NW	NW	Frank Ridgway, Sgt. Sig. Corps.
Delaware.	Swarthmore—Swarthmore College.	81.0	32.0	5.20	9.00	3.00	12	1	13	17	NW	NW	NW	Prof. Susan J. Cunningham.
Erie.*	Erie.	79.5	24.3	3.43	. . .	. . .	21	3	9	19	W	W	W	Peter Wood, Sgt. Sig. Corps.
Fayette.	Uniontown.	. . .	. . .	6.27	12.55	. . .	14	5	15	11	. . .	. . .	. . .	Wm. Hunt.
Forest.	Tionesta.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	R. L. Haslet.
Franklin.*	Chambersburg—Wilson Female College.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	Miss Mary A. Ricker.
Fulton.	McConnellsburg.	77.7	28.3	5.41	11.00	1.00	14	8	15	8	NW	W	NW	Thomas F. Sloan.
Greene.	Waynesburg.	. . .	. . .	4.65	12.00	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	Capt. W. C. Kimber.
Huntingdon.*	Huntingdon—The Normal College.	. . .	. . .	3.61	9.60	.60	14	2	12	17	W	W	W	Prof. W. J. Swigart.
Indiana.	Indiana—State Normal School.	79.2	27.4	4.67	19.75	.50	15	3	13	15	NW	W	NW	Prof. S. C. Schmucker.
Lancaster.	Lancaster.	79.2	29.9	4.84	10.00	1.00	14	6	14	11	W	NW	W	E. E. Weller.

Lawrence.	New Castle.	....	....	4.29	10.50	....				15	W	W	NW	Wm. T. Butz.
Lebanon.	Annville—													
	Lebanon Valley College.	85.1	33.6	...	14.60	.50			17	11	W	W	W	Geo. W. Bowman, A.M., Ph.D.
Lehigh.	Coopersburg.	....	....	7.92	19.80	1.30	15		12	15	NW	NW	NW	M. H. Boye.
Luzerne.	Drifton—													
	Drifton Hospital.			4.81	19.50	....	12				NW	NW	NW	H. D. Miller, M.D.
Lycoming.*	Nisbet.			4.30	....	....					W	W	W	John S. Gibson, P.M.
Mercer.*	Greenville—													
	Thiel College.	89.5	25.	5.12	19.80	....	18			25	NW	NW	NW	Prof. S. H. Miller.
Mifflin.	Lewistown.	...			....	....				...	...			Culbertson & Lantz.
Montgomery.	Pottstown.	75.0	29.0	.95	16.50	3.00		14	6	11	NW	NW	NW	Charles Moore, D.D.S.
Northampton.	Bethlehem.	76.0	30.0	6.12	22.00	....	13	15	5	11	N	W	W	Lerch & Rice.
Perry.	New Bloomfield.			5.87	12.75	....	11	8	9	14	W	W	W	Frank Mortimer.
Philadelphia.*	Philadelphia—													
	Signal Office.	68.0	28.0	.61	....	....	19		12	15	NW	NW	NW	Luther M. Dey, Sgt. Sig. Corps.
Potter.	Coudersport.			4.20	18.00	....	12	9	7	15	W	W	W	C. L. Peck.
Schuylkill.	Girardville.			5.25	20.25	1.25	20	8	13	10	W	W	NW	E. C. Wagner.
Snyder.	Selinsgrove.				....	....				...	...		...	J. M. Boyer.
Somerset.	Somerset.	81.9	27.	5.42	30.50	3.00	15		2	23	NW	NW	NW	W. M. Schrock.
Sullivan.	Eagles Mere.	73.5	19.	7.61	48.60	1.60	21	4	8	19	SW	SW	SW	E. S. Chase.
Tioga.	Wellsboro†.	76.2	21.0	6.03	29.25	.50	20	3	12	16	SW	SW	S	H. D. Deming.
Union.*	Lewisburg.		...	3.21	12.50	.90	12		16	12	NW	NW	NW	F. O. Whitman.
Warren.	Columbus.	72.0	20.5	5.13	12.00	3.00	24		3	25	SW	SW	SW	Wm. Loveland.
Washington.	Canonsburg.	77.2	26.0	.48	11.40	....	20			15	W	NW	W	A. L. Runion, M.D.
Wayne.	Honesdale.	69.0	27.0	4.48	20.00	....	15			...				John Torrey.
Westmoreland.	Greensburg.	...		5.54	11.40	.80	18	4	5	22	W	W	NW	Hilary S. Brunot.
Wyoming.*	South Eaton.	...	...	.46	16.00	....	14	8	11	12	NW	NW	NW	Benj. M. Hall.
York.*	York.	81.2	30.	5.44	8.00	....		12	8	11	NW	NW	NW	Mrs. L. H. Grenewald.

* Observations taken at 8 A. M. and 8 P. M.

† Observations taken at 12 noon.

PRECIPITATION FOR MARCH, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro.	Harrisburg.	Selinsgrove.
1.	.08		.01	.33				.05	.04	.06									...							...
2.	.05		01	.01	01			.10	.01				.05	.02					...							...
3.	.04																		...							...
4.	.02	.30	.12	.15	02		.20	08	.06	.12	.20	20	.20		.04	.05	03		...	.05		.10		.20		...
5.	.13	.15		.05	12	.15	.05	25	.17				.10	.28		03	04		...	.20	.33	.15	.50	.05	.01	...
6.	.09		11	.26	80	1.10		.80	.47	.00	.30	02	.75	1 27	.33	23	52	15	...	.21	.10	1.00		1.20	.12	...
7.	.01																		...							...
8.																			...							...
9.																			...							...
10.		.07		.01	.03				.01	.04									...							...
11.	.16	.15	.55	.27	.60	.38	80	25	.61	40	.64	40	.03	.20	.36	30	37	.22	...	.37	.08	.82	.65	.52	.33	...
12.	.16		.45	.26	.03			35	.04		.04	14		.14			02	.07	...	.04	.05	.12		.05	.20	...
13.	.23	.85	.65	.58	.36		62		.12	20	.25	43	.01	.01	.13	13	12		...	.17	.05	16	.04	.70		...
14.				.02	.18	1.14	.06	.06	.64	.39			.48	.45	.60	50	70	.55	...	.54	.70	.59	.65	.16	.60	...
15.	.28	.05	.03	.03	.02	.05	.05		.06		04		.25				02		...	.08	.06		.34	.02	.02	...
16.	.13	.05	.68	.45	.02		.07		.15	12	02		.50	.51					...						.20	...
17.	.08	.05	.15	.02	.02	.04	.06		.04				15						...							...
18.	.01						.02				02		.10						...							...
19.		.75	28	.06	.46	.89	.71	70	.06	75	75	55	1.30	1.55	1.03	.92	.96	.77	...	.72	1.00	.60	.70	.50	.40	...
20.																			...							...
21.	.37	.50	55	.50	.12	.57	.94	.80	.47	35	.48	[illegible]	.01	.80		13	.20	.16	...	.18	.08	24	1.10	.34	.42	...
22.	.16	.43	.10	.28	.80	1.04	.40	.67	.67	1.12	.60	.25	.07	.45	42	44	.50		...	.62	2.10	.71	1.05	.84	.80	...
23.				.01	.06	.04		.30	.13			.18	.02	.32		12		.47	...	.03	.08	.02	.14	.10	.04	...
24																			...							...
25.	.10			.18	.08	.17			.26	30	63	.26	.01		22	.19	.21		...	.18	.01	23	.34		.34	...
26.	.04		.05	.05								.10		.21		.03		.23	...		.07			.08	.04	...
27.					.03	.16			.02								.04		...	.02				.10		...
28.	.96	.74	1.00	1.00	.42	.30			.42	25	60	[illegible]	.04	.30	34	.33	.30	.24	...	.31	.53	.39	.36	.50	.24	...
29.	.17	.10	.40	.05	.07			.07	.06	10	20		.30				.04		...		.10	10		.20		...
30.	.18	.10	.03	.24	.20			.13	.15	22	22	.22	.45				.05	.04	...	.05		15		.22		...
31.				.31	.01	.34		.06	.08		22		.25	.02	04	1	.06		...	.08	.10	10		.05	.04	...
	3.43	4.29	5.12	13	3.86	6.27	3.98	4.67	5.74	5.42	6.32	4.79	5.07	6.53	3.73	3.61	4.18	2.90	...	3.85	5.41	48	5.87	6.03	3.80	...

PRECIPITATION FOR MARCH, 1890—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Reading.	Pottstown.	West Chester.	Coatesville.	Kennett Square.
1.	.09		.01	.28								.30	.35	.30	.22
2.															
3.															
4.		.05	.33		.20		.04	.02							
5.		.07	.34	.05	.23		.15		.06	.07			.04	.08	
6.	.41	1.20	1.36	.48			.17	1.00	.70	.66	.22	.60	.34	.35	.05
7.															
8.															
9.															
10.					.13		.13						.02		
11.	.29	.32	.18	.89	.18		.34	.26	.34	.43	1.23	.40	.39	.40	.41
12.					.28								.03	.02	.01
13.	.14	.32	.28	.26	.07		.11	.09	.19				.24	.10	.02
14.	.75	.26	.56	.53	.30		.64	.55	.38	.47	.65	.88	.67	.75	.47
15.	.39	.10	.48	.25	.01		.35	.50	.36	.45	.01	.57	.34	.52	.40
16.		.07	.36				.08		.02						
17.			.28							.03		.02			
18.					.05										
19.	.53	.32	.58	1.02	.45		.57	.60	.60	.60	.07	1.15	1.39	.46	.75
20.					.05										
21.	.20	.06	.38	.07			.31	.20	.05	.15	1.57	.32	.28	.31	.07
22.	1.38	.63	.66	2.12	.94		1.18	.62	.72	.98	.20	1.54	1.03	1.27	.94
23.		.47	.15	.05			.14		.32				.14	.17	.18
24.							.41								
25.	.18	.06	.51		.06			.33	.15	.60		.37	.17	.36	
26.		.07			.02		.05				.45		.12	.05	.21
27.	.03				.31		.12	.46							
28.	.45	.42	.71	.88	.09		.26		.52	.33	.41	1.50	.85	.74	.72
29.		.06	.18		.01		.04	.10		.04				.04	
30.		.10	.20	.08			.02	.16	.05		.05	.10	.07	.12	.05
31.			.06				.19				.02	.30	.30	.25	.25
	4.84	4.58	7.61	6.46	3.38	...	5.25	4.89	4.46	4.81	4.88	8.05	6.77	7.29	4.76

	Dyberry.	Honesdale.	Quakertown.	Swarthmore	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.
1.			.24		.28		.30	.26	.32	.34
2.					.02					
3.					.05					
4.				.35						
5.	.05	.03			.02				.03	
6.	.70	.63	.86	.20	.35	.60	.28	.06	.25	.05
7.										
8.										
9.										
10.										
11.	.30	.25	.60	.42	.33	.59	.51	.52	.56	.47
12.			.01		.01					
13.	.12	.08	.10		.05	.12	.14	.09	.19	
14.	.55		.78	.30	.30	.47	.77	1.00	.79	.66
15.	.22	.66	.59	.38	.48	.52	.57		.50	.47
16.									.03	
17.		.01			.02		.05			
18.										
19.	.70	.41	1.30	.40	.41	1.37	.47	1.01	.98	1.01
20.										
21.	.25	.28	.36	.91	.30	.25	.32	.38	.31	.24
22.	.80	.98	1.40	.73	.88	1.49	1.19	1.12	1.05	1.04
23.	.12	.01	.22	.51	.10	.18	.15		.19	.03
24.										
25.	.12	.43	.26			.12	.13		.10	
26.	.12	.04	.15	.10	.09	.37	.17	.24	.11	.19
27.										
28.	.51	.54	1.19	.60	.66	.51	1.23	.95	1.10	.58
29.	.05	.01								
30.	.09	.12	.09		.05		.09	.04	.08	.01
31.			.16	.30	.21	.10	.05	.02	.12	
	5.00	4.48	8.31	5.20	4.61	6.69	6.43	5.69	6.71	5.09

PRECIPITATION FOR MARCH, 1890—*Continued.*

	Lansdale.	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	Centre Valley.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown.	Greensburg.	Tipton.	Coudersport.	Coopersburg.	Hulmeville.	Westtown.	Meadville.
1.	.13	.28			.23			.05														.26		.33	.02
2.																									.02
3.																									
4.						.10				.20			.10						.10	.01	.30				.10
5.	.30	.28		.02		.35	.10				.06	.05		.17				.15		.37		.05			.10
6.		.27		.40	.57	.28	.50	.72	.40	1.20	.55	.80	.70	.60				.34	.42	.01	.30	.45		.20	
7.																									
8.																									
9.																									
10.						.04																			
11.	.54	.54		.58	.50	.03	.12	.11	.44	.45		.46	.40	.62				.25	.83	.25	.30	.60		.33	.59
12.						.02			.05		.07							.01		.01	.30	.04		.05	.46
13.		.08		.97		.35	.15		.11			.04	.20	.07				.09	.26	.08	.10	.01			.59
14.	.73	.59		.43	.62	.05	.90	.22	.80	.05	.06	.41	.70	.63				.52	.47	.55		.82		.89	
15.	.13	.48		.02	.31	.04	.25	.07			.40	.36		.28				.14	.05			.55			.13
16.					.01		.01					.15						.02	.03		.30				.45
17.	.41					.05						.10							.05						
18.																									
19.	.51	.63		.80	.76	.55	1.36	1.36	.04	.70	51	.70	.50	.75				1.10	.87	.98	.40	.90			.10
20.									1.35															.50	
21.	.31	.27		.52		.37	.46	.07	.23	.45	.24	.36		.28				.18	.45	.32	.80	.35			.45
22.	1.00	.84		1.05	1.95	1.02	1.09	1.02	1.02	.75	.56	1.27	.80	.99				.44	1.01	.53		1.90		1.19	.14
23.		.15		.15		.07	.06	26	.10	.20		.15						.04	.07			.37			
24.																									
25.	.71	01			38	.13		05	.20	.30		.36	.30	.15				.25	.16	.25		.21		.18	.12
26.		20		.18			.55				.23	.26						.01			.40	.24			
27.						14			05				.40	.08				.01	.10	.10					.02
28.	.34	.95		1.10	.54	.41	29	1.07	.52	.35	42	.60		.24				.43	.22	.33	.40	.98		.59	.70
29.						06								.50					.02	.11	.30				.52
30.		.09		.05	04	34	.03	.04			02		.20						.31		.30	.06		.02	.30
31.	.22			.10	.21	.08			10		.09			.10				.05	.12			.13		.40	
	5.33	5.66	. . .	6.37	6.12	4.48	5.87	5.04	5.41	4.65	3.21	6.07	4.30	5.46	5.30	. . .	. . .	4.03	5.54	3.90	3.20	7.92	. . .	4.68	4.81

FOR APRIL, 1890.

TEMPERATURE.

The mean temperature of 67 stations for April, 1890, was 48°.7, which is about 3° above the normal.

The mean of the daily maximum and minimum temperatures 61°.2 and 36°.0 give an average daily range of 25°.2, and a monthly mean of 48°.6.

Highest monthly mean, 53°.7, at Annville.

Lowest monthly mean, 43°.4 at Dyberry and Phillipsburg.

Highest temperature recorded during the month, 85° on 12th, at Lewistown and Lynnport.

Lowest temperature, 12° at Charlesville and Columbus, on the 1st.

Greatest lowest monthly range, 44°.1 at Somerset.

Least local monthly range, 16°.7 at Eagles Mere.

Greatest daily range, 60° at Ligonier on 17th.

Least daily range, 1° at Annville on 25th.

The warmest day of the month was on the 12th. On this day 25 stations recorded a temperature of over 80°.

The coldest was on the 1st and 2d, when 15 stations recorded a temperature below 20°.

BAROMETER.

The mean pressure for the month 30.12, is about .12 above the normal.

The highest observed was 30.67 at Philadelphia and Eagles Mere on the 2d.

The lowest was 29.317, at York, on the 18th.

PRECIPITATION.

The average rainfall (including melted snow) was 3.46 inches which is an excess of about three-quarters of an inch. Rain was of almost daily occurrence from the 1st to the 10th, and from the 23d to the 30th inclusive. During the interval of twelve days, from the 10th to the 23d, there was almost a total absence.

The largest totals for the month in inches were Blue Knob, 5.50; Altoona, 5.29; Hollidaysburg, 4.96; Huntingdon, 4.91; Pittsburgh, 4.87; and Columbus, 4.65.

The least were Lynnport, 1.75, and South Eaton, 1.81.

Twenty-four stations reported snow in measurable quantities. The largest total for the month was 3 inches at Mauch Chunk and Centre Valley. None on the ground at the end of the month.

WIND AND WEATHER.

The prevailing wind was from the northwest. The weather was favorable during the entire month for the growth of grass and grain. Very little damage was done by frosts.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.				NUMBER OF DAYS.			WIND. PREVAILING DIRECTION.			OBSERVERS.
				Total inches.	Total snowfall during month.	Depth of snow on ground at end of month.	Number of days rainfall	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Adams,*	Gettysburg,		...	3.31	...	...	11	19	1	10	S	SW	S	Prof. E. S. Breidenbaugh.
Allegheny.*	Pittsburgh.	82.0	46.4	4.87		...	14	11	7	12	N	N	N	Oscar D Stewart, Sgt. Sig. Corps
Bedford,	Charlesville (29 days).	71	38.8	2.74	.25	...	8	14	7		N	N	NW	Miss E. A. G. Apple.
Berks.*	Reading.	...	...	2.62		...	7	18	5		N W	NW	NW	C. M Dechant. C. E.
Blair,†	Altoona.	55.9	37.0	5.29		...	13	...	...		...	...	...	Dr. Charles B. Dudley.
Bradford,	Wysox (27 days).	69.3	34.5	3.42		...	8	16	3		NW	N W	NW	Charles Beecher.
Bucks.	Quakertown.	67.0	36.5	22	2.50	...	10	12	12		NE	SW	SW	J. L. Heacock.
Cambria,*	Johnstown.	79.	40.0	4.66		...	15	15	6		SE	SE	SE	E. C. Lorentz.
Cameron.	Emporium,		...	3.98	...	...	10	12	11		W	W	W	T. B. Lloyd.
Carbon.*	Mauch Chunk.		...	3.45	3.00	...	10	15	10		NW	NW	NW	John J. Boyd
Centre.	State College— Agricultural Experiment Station,	69.4	37.7	3.75	.20	...	10	11	9	10	W	W	W	Prof. Wm. Frear.
Chester.	West Chester.		3.75		...	...	...	...	...		NW	NW	S	Jesse C. Green, D. D. S.
Clarion.	Clarion— State Normal School.	81	42.5	...	...	...	...	...	...		SW	SW	SW	C. M. Thomas. B. S.
Clearfield,	Grampian Hills,			3.39	...	...	11	8	13	9	SW	SW	W	Nathan Moore.
Clinton,	Lock Haven.			4.22	...	...	11	19	5	6	W	W	W	Prof. John A. Robb.
Columbia.	Catawissa (28 days),			2.92	...	...	8	...	...					Robert M. Graham.
Crawford,	Meadville.	73.0	35.	4.43	...	...	11	18	9		S	S	S	J. & B. F. Metcalf.
Cumberland.	Carlisle,	30.5	43.	3.10	...	...	11	11	10		SW	S	NW	J. E. Pague.
Dauphin.*	Harrisburg.	61.5	37.	2.46	...	...	9	12	12		SW	SW	SW	Frank Ridgway, Sgt. Sig. Corps.
Delaware.	Swarthmore— Swarthmore College.	70.9	40.4	2.88	...	...	7	3	14	12	NW	NW	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	80.0	34.0	3.16	...	...	18	11	8	12	NE	NE	NE	Peter Wood, Sgt. Sig. Corps.
Fayette.	Uniontown.			3.90	...	...	11	16	9	5	W	SW	SW	Wm. Hunt.
Forest.	Tionesta,				...	...	...	...	...					R. L. Haslet.
Franklin.*	Chambersburg— Wilson Female College (21 days).		...	1.55	...	...	...	...						Miss Mary A. Ricker.
Fulton.	McConnellsburg.	70.5	39.6	3.38	...	...	8	15		7	N	W	W	Thomas F. Sloan.
Greene.	Waynesburg.			2.90	...	...	8	16		10		...	...	Capt. W. C. Kimber.
Huntingdon.*	Huntingdon— The Normal College.			91	...	...	11	11	9	10	W	W	W	Prof. W. J. Swigart.
Indiana.	Indiana— State Normal School,	70.1	40.6	4.66	...	...	12	15	5	10	NW	NW	W	Prof S. C. Schmucker
Lancaster.	Lancaster.	70.6	42.3	2.18	1.00	...	9	18	10	7	E	NW	NW	E. E. Weller.
Lawrence,	New Castle.			3.82	...	...	9	15	5	10	W	S	SW	Wm. T. Butz.

Lebanon	Annville—													
	Lebanon Valley College	82.7	48.	. . .	2.00	. . .	. . .	10	13	7	NW	W	W	Geo. W. Bowman. A.M.. Ph.D.
Lehigh	Coopersburg			3.21	1.70	. . .	9		10	8	SE	NW	SE	M. H. Boye.
Luzerne	Drifton—													
	Drifton Hospital			3.25		. . .	8		13	5	NW	NW	NW	H. D. Miller, M. D.
Lycoming,*	Nisbet			3.90		. . .	8	21		6	W	W	W	John S. Gibson, P. M.
Mercer,*	Greenville—													
	Thiel College	84.9	40.	4.57	. .	. . .	12			14	S	. . .	N	Prof. S. M. Hiller.
Mifflin	Lewistown	69.4	42.4	3.66	70	. . .	11		9	8	SW	SW	NW	Culbertson & Lantz.
Montgomery	Pottstown	70.0	40.0	1.97		. . .	5	22		5	NW	SW	SW	Charles Moore, D.D.S.
Northampton	Bethlehem	67.0	41.0	2.57		. . .	5	22		7	W	W	W	Lerch & Rice.
Perry	New Bloomfield			3.47		. . .	9	13		10	N	N	W	Frank Mortimer.
Philadelphia,*	Philadelphia—													
	Signal Office	61.0	36.0	2.28		. . .	10	10		9	NW	NW	NW	Luther M. Dey, Sgt. Sig Corps.
Potter	Coudersport			. . .	. . .	. . .	. . .			. .	. . .	. . .	. . .	C. L. Peck.
Schuylkill	Girardville	. .	. . .	4.40	.75	. . .	11	16		6	W	NW	W	E. C. Wagner.
Snyder	Selinsgrove	70.	40.5	4.11	1.00	. . .	10	7	20	3	NW	SE	SE	J. M. Boyer.
Somerset	Somerset	77.	39.0	3.16	.30	. . .	9	15	9	6	NW	NW	NW	W. M. Schrock.
Sullivan	Eagles Mere	64.	31.2	4.23	.25	. . .	9	18	10	7	SW	SW	SW	E. S. Chase.
Tioga	Wellsboro'	69.	30.4	4.03		. . .	12	11	13	6	N	N	SW	H. D. Deming.
Union,*	Lewisburg	. . .	. . .	3.54		. . .	7	8	18	6	SW	SW	SW	F. O. Whitman.
Warren	Columbus	64.5	29.9	4.65		. . .	14	12	7	11	SW	SW	SW	Wm. Loveland.
Washington	Canonsburg	73.	42.0	4.24		. . .	12	9	9	12	W	W	SW	A. L. Runion, M. D.
Wayne	Honesdale	56.	39.0	2.87	1.00	. . .	10			. .	. . .	. . .	. . .	John Torrey.
Westmoreland	Greensburg			. . .		. . .	. . .			. .	. . .	. . .	. . .	Hilary S. Brunot.
Wyoming	South Eaton			.81		. . .	12	16	7	7	S	S	S	Benj. M. Hall.
York,*	York	71	39.8	1.94	50	. . .	10	19	3	8	NW	NW	NW	Mrs. L. H. Greenewalt.

* Observations taken at 8 A. M. and 8 P. M. † Observations taken at 12 noon.

PRECIPITATION FOR APRIL, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro'.	Harrisburg.	Selinsgrove.
1.					.02				.02					.15		.30	.10	.07		.08	.15				.04	
2.																										
3.	.08	.50	.43	.17	.01	.11		.05																		
4.	.53	.25	.45	.76	.73	.47		.30	.66	.45	.53	.82	1.00	.90	.64	.73	.75	.44		.76	.50	1.20	.98	.66	.98	.75
5.	.08		.01	.01	.02			.25	.09				.10					.14								
6.																										
7.	.16	.08	.16	.29	.06	.09		.07	.15	.20	.20	.21	.30	.60	.06	.04		.06		.09	.05	.05	.07	.05		.06
8.	.50	.47	.61	.88	.44	.16		.60	.54	.35	.42	.67	.40	.25	.41	.45	.53	.28		.41	.08	.63	.27	2.76	.14	.24
9.	.28	.80	.64	.30	1.40	.99		1.40	1.98	.41	.72	.22	1.80	.75	2.11	1.89	2.05	3.13		1.15	.32	.55	1.27	.05	.54	1.77
10.	.01		.03	.03		.17		.07	.05	.15		.05	.10	.02			.07	.08			.03	.03				
11.				.02					.01																	
12.																										
13.																										
14.				.02	.11	.05		.04			.03			.03												
15.																										
16.																										
17.																										
18.																										
19.																										
20.																										
21.																										
22.																										
23.	.02		.01	.15	.02			.01	.03		.02				.02						.22	.02				.02
24.	.12	.32	.45	.40	.48	.54		.77	.33	.45	.38	.37	.60	.20	.55	.68	.60	.28		.27	.37	.52	.25	.16	.23	.05
25.						.22			.06	.20		.06	10	.05	.03	.12	.08	.14		.04	.10	.10	.22		.34	.36
26.	.90	.60	1.00	1.10	.76	.76		.40	.31	.50	.32	.68	.40	.40	.04	.14	.39	.29		.31	.12	.27	.24	.20	.16	.20
27.	.34	.70	.68	.39	.70	.34		.70	.38	.45	.67	.70	.50	.50	.14	.51	.39	.25		.45		.55	.15	.12	.01	.30
28.	.01												.10	.10				.15								
29.	13	.10	.10	.13	.10				.03		.10	.20	10		.13	.04		.08		.19		.40	.07	.08	.02	.36
30.					.02				.02					.02		.01										
31.																										
	3.16	3.82	4.57	4.65	4.87	3.90	. . .	4.66	4.66	3.16	3.39	3.98	5.50	3.97	4 11	4.91	4.96	5.29	. . .	3.75	1.94	4.22	3.47	4.08	2.46	4.11

PRECIPITATION FOR APRIL, 1890—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Reading.	Pottstown.	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Seisholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.
1.	.46			.20			.07	.11	.02				.18	.15	.18	.08	.06	.25		.18	.20	.20	.25	.16	.32	
2.																										
3.					.13																					
4.	.93	.40	1.65	.83	.45	.75	.98	.68	.35	.95	1.21	.62	.78	.57	.56	.48	.49	.88	1.18	.74	1.00	.60	.56	.55	.59	.47
5.		.32							.12							.11							.02			
6.																							.20			
7.	.07	.17	.26	.03	.70	.11	.37	.02	.13	.27			.10	.08	.15	.25	.20	.26	.10	.07	.21	.21		.36	.17	
8.	.19	.56	.38	.15	.89	.20	.22	.51	.35	.45		.21	.45	.30	.45	.47	.70	.21	.47	.30	.20	.26	.16	.15	.25	.58
9.	.30	.50	.28	.98	.17	1.40	1.74	.52	.27	.90	.21	.34	.27	.24	.25	.38	.40	.83	.20	.19	.92	.36	.61	.61	.54	.31
10.											.55		.06	.02									.01			
11.																										
12.																										
13.								.01																.02		
14.																										
15.																										
16.																										
17.																										
18.																										
19.																										
20.																										
21.																										
22.																										
23.			.21				.05		.02								.11									
24.	.19	.17	.42	.26	.07	.03	.12	.25	.20	.14	.12		.20	.17	.17	.31	.32	.13		.15	.02	.08	.08	.09		.05
25.	.58			.31		.18	.48	.10		.32	.38	.54	.55	.51	.66	.25	.12	.36	.30	.44	.40	.43	.32	.30	.55	.31
26.	.10	.56	.34	.50	.63	.15	.13	.21	.10	.12	.07		.22	.10	.11	.20	.24	.14	.51	.07	.15	.09	.10	.15	.05	.39
27.	.11	.38	.48	.07	.38	.10	.08	.04	.14	.10	.08	.26	.25	.26	.20		.21	.15	.12	.13	.10	.09	.07	.07	.04	.01
28.								.03	.01				.03					.01		.01		.04	.03			
29.		.20	.21	.03			.16		.10							.02										
30.				.03				.14																		
31.																										
	2.93	3.26	4.23	3.39	3.42	2.92	4.40	2.62	1.81	3.25	2.62	1.97	3.15	2.39	2.73	2.53	2.87	3.22	2.88	2.28	3.23	2.36	2.41	2.46	2.51	2.12

PRECIPITATION FOR APRIL, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro'.	Harrisburg.	Selinsgrove.
1					.02				.02					.15		.30	.10	.07		.08	.15				.04	
2.																										
3.	.06	.50	.43	.17	.01	.11		.05																		
4.	.53	.25	.45	.76	.73	.47		.30	.66	.45	.53	.82	1.00	.90	.64	.73	.75	.44		.76	.50	1.20	.98	.66	.96	.75
5.	.08		.01	.01	.02			.25	.09				.10					.14								
6.																										
7.	.16	.08	.16	.29	.06	.09		.07	.15	.20	.20	.21	.30	.60	.06	.04		.06		.09	.05	.05	.07	.05		.06
8.	.50	.47	.61	.88	.44	.16		.60	.54	.35	.42	.67	.40	.25	.41	.45	.53	.28		.41	.08	.63	.27	2.76	.14	.24
9.	.28	.80	.64	.30	1.40	.99		1.40	1.98	.41	.72	.22	1.80	.75	2.11	1.89	2.05	3.13		1.15	.32	.55	1.27	.05	.54	1.77
10.	.01		.03	.03		.17		.07	.05	.15		.06	.10	.02			.07	.03			.03	.08				
11.				.02					.01																	
12.																										
13.																										
14.				.02	.11	.05		.04			.03			.03												
15.																										
16.																										
17.																										
18.																										
19.																										
20.																										
21.																										
22.																										
23.	.02		.01	.15	.02			.01	.03		.02				.02						.22	.02				.02
24.	.12	.32	.45	.40	.48	.54		.77	.33	.45	.38	.37	.60	.20	.55	.68	.60	.28		.27	.37	.52	.25	.16	.23	.06
25.						.22			.06	.20		.06	.10	.05	.08	.12	.08	.14		.04	.10	.10	.22		.34	.36
26.	.90	.60	1.00	1.10	.76	.76		.40	.81	.50	.32	.68	.40	.40	.04	.14	.39	.29		.31	.12	.27	.24	.20	.16	.20
27.	.34	.70	.68	.33	.70	.34		.70	.38	.45	.67	.70	.50	.50	.14	.51	.39	.25		.45		.55	.15	.12	.01	.30
28.	.01												.10	.10				.15								
29.	18	.10	.10	.18	.10				.06		.10	.20	10		.13	.04		.03		.19		.40	.07	.08	.02	.36
30.					.02				.02					.02		.01										
31.																										
	3.16	3.82	4.57	4.65	4.87	3.90	...	4.66	4.06	3.16	3.39	3.98	5.50	3.97	4 11	4.91	4.96	5.29	...	3.75	1.94	4.22	3.47	4.08	2.46	4.11

PRECIPITATION FOR APRIL, 1890—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Reading.	Pottstown.	West Chester.
1	.46			.20			.07	.11	.02				.18
2													
3					.13								
4	.93	.40	1.65	.83	.45	.75	.98	.68	.35	.95	1.21	.62	.78
5		.32							.12				
6													
7	.07	.17	.26	.03	.70	.11	.37	.02	.13	.27			.10
8	.19	.56	.38	.15	.89	.20	.22	.51	.35	.45		.21	.45
9	.30	.50	.28	.98	.17	1.40	1.74	.52	.27	.90	.21	.34	.27
10											.55		.06
11													
12													
13								.01					
14													
15													
16													
17													
18													
19													
20													
21													
22													
23			.21				.05		.02				
24	.19	.17	.42	.26	.07	.03	.12	.25	.20	.14	.12		.20
25	.58			.31		.18	.48	.10		.32	.38	.54	.55
26	.10	.56	.34	.50	.63	.15	.13	.21	.10	.12	.07		.22
27	.11	.38	.48	.07	.38	.10	.08	.04	.14	.10	.08	.26	.25
28								.03	.01				.03
29		.20	.21	.03			.16		.10				
30				.03				.14					
31													
	2.93	3.26	4.23	3.39	3.42	2.92	4.40	2.62	1.81	3.25	2.62	1.97	3.15

	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.
1	.15	.18	.08	.06	.25		.18	.20	.20	.25	.16	.32	
2													
3													
4	.57	.56	.48	.49	.88	1.18	.74	1.00	.60	.56	.55	.59	.47
5			.11							.02			
6										.20			
7	.08	.15	.25	.20	.26	.10	.07	.21	.21		.36	.17	
8	.30	.45	.47	.70	.21	.47	.30	.20	.26	.16	.15	.25	.58
9	.24	.25	.38	.40	.83	.20	.19	.92	.36	.61	.61	.54	.31
10	.02									.01			
11													
12													
13											.02		
14													
15													
16													
17													
18													
19													
20													
21													
22													
23				.11									
24	.17	.17	.31	.32	.13		.15	.02	.08	.08	.09		.05
25	.51	.66	.25	.12	.36	.30	.44	.40	.43	.32	.30	.55	.31
26	.10	.11	.20	.24	.14	.51	.07	.15	.09	.10	.15	.05	.39
27	.26	.20		.21	.15	.12	.13	.10	.09	.07	.07	.04	.01
28					.01		.01		.04	.03			
29			.02										
30													
31													
	2.39	2.73	2.53	2.87	3.22	2.88	2.28	3.23	2.36	2.41	2.46	2.51	2.12

PRECIPITATION FOR APRIL, 1890—*Continued.*

	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	Centre Valley.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown.	Greensburg.	Tipton.	Coudersport.	Coopersburg.	Hulmeville.	Westtown.	Meadville.	Ligonier.	Scranton.
1.	.36		.08			.12	.05	.14			.35						.07		.02		.16					.10
2.																										
3.					.15																			.15		
4.	.72	.70	.06	.66	.33	1.35	.95	1.29	.55	.90	.84	1.20	.64			1.41	.64		.75		1.05			.87		.52
5.	.01					.07					.03															.11
6.																										
7.	.10	.05	.29		.07	.04	.31	.03		.05	.23	.10				.05	.16		.21		.33			.17		.21
8.	.38	.30	.15	.63	.15	.18	.14	.23	.25	.20	.18	.50	.34			.15	.43		.75		.18			.88	.37	.40
9.	.50	.15	.65	.58	.84	.47	1.12	.65	.65	.83	1.43	.50	.60			.17	1.30		1.05		.87			.20	1.35	.70
10.					.20				.20							.01									.12	
11.																									.10	.03
12.																										
13.																										
14.	.01				.11																			.02	.08	
15.													.01													
16.																										
17.																										
18.																.04										
19.																										
20.																										
21.																										
22.																										
23.																.01	.01							.02		.06
24.	.12	.20	.08		.60	.26	.13	.38	.35	1.03		.55	.32			.40	.19		.55		.08			.60	.35	.20
25.	.30	.50	.31	.43		.32	.29		.20		.29		.15			.46	.10		.05		.33					.06
26.	.21	.10	.11	.17	1.29	.33	.07	.58	.50		.04	.30				.36	.16		1.01		.10			1.07	.52	.14
27.	.11	.15	.11		.25	.04	.10	.08	.20	.51	.05		.67			.25	.24		.40		.11			.38	.55	.21
28.												.50													.01	.01
29.					.20		.01			.02		.30					.35		.08					.07		.10
30.					.05	.01					.06		.01				.01								.02	
31.																										
	2.91	2.15	1.84	2.57	4.24	3.19	3.17	3.38	2.90	3.54	3.45	3.90	2.74	1.75	...	3.31	3.66	...	4.89	...	3.21	...	...	4.43	3.38	2.85

FOR MAY, 1890.

TEMPERATURE.

The mean temperature of 59 stations for May, 1890, was 58°.8, which is about 1° below the normal.

The mean of the daily maximum and minimum temperatures 69°.6 and 47°.4 gives an average daily range of 22°.2 and a monthly mean of 58°.5.

Highest monthly mean, 63°.9 at Annville.

Lowest monthly mean, 52°.5 at Eagles Mere.

Highest temperature recorded during the month, 89° on 31st, at Wilkes-Barre.

Lowest temperature, 23° on the 1st at Nisbet.

Greatest local monthly range, 31°.7 at Selinsgrove.

Least local monthly range, 15° at Eagles Mere.

Greatest daily range, 48° at Lewistown on 13th.

Least daily range, 1° at LeRoy on the 30th.

From January 1, 1890, to May 31, 1890, the excess in temperature at Philadelphia was 650°, and at Erie 383°.

BAROMETER.

The mean pressure for the month, 29.96, is about normal. At the U. S. Signal Service Stations, the highest observed was 30.31 at Philadelphia on the 22d and the lowest 29.60 at Harrisburg on the 5th.

PRECIPITATION.

The average precipitation, 6.71 inches, is an excess of three and one-half inches. Rains were of almost daily occurrence in some parts of the state. The 17th, 28th and 29th were the only days on which no rain was reported. The largest monthly totals in inches were: Girardville, 12.41; Emporium, 9.61; Eagles Mere, 8.97; Somerset, 8.90; Mauch Chunk, 8.11; Gettysburg, 8.10 and Uniontown, 8.03. The least was Philadelphia, 2.96.

WIND AND WEATHER.

The prevailing wind was from the west. On the 10th, about 5 P. M., a tornado passed over the southern part of Franklin county, doing considerable damage. The weather during the month was excessively wet. The ground was saturated and cold, and caused much delay in plowing and seeding. Average number: Rainy days, 15; clear days, 7; fair days, 11; cloudy days, 13.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for May, 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Least.	Date.
Adams,*	Gettysburg,	624	....	....	....	59.6	83.0	1	32.0	2	70.6	45.0	25.6	38.0	13	3.0	6
Allegheny,*	Pittsburgh,	847	29.950	30.290	29.630	62.0	86.0	30	37.0	2	71.4	52.5	18.9	36.0	18	9.0	7
Bedford,	Charlesville,	1,300	....	....	....	57.4	82.0	13	28.0	2	70.2	42.0	28.2	42.0	12	7.0	7
Berks,*	Reading,	304	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Blair,†	Altoona (29 days),	1,181	....	....	....	61.6	80.0	14	35.0	2	71.0	52.2	18.8	36.0	2	10.0	23
Bradford,	Wysox,	718	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bucks,	Quakertown,	536	29.980	30.280	29.600	59.0	80.7	19	31.0	9	70.8	46.9	23.9	37.0	31	12.0	4
Cambria,*	Johnstown,	1,184	29.996	30.273	29.585	59.5	82.0	13	33.0	2	71.1	47.8	23.3	38.0	18	9.0	26
Cameron,	Emporium,	1,030	....	....	....	59.5	81.0	13, 29	28.0	2	70.0	44.8	25.2	46.0	3	9.0	14
Carbon,*	Mauch Chunk,	550	....	....	....	58.4	79.0	1, 14	30.0	9	70.5	46.4	24.1	39.0	9	7.0	4
Centre,	State College— Agricultural Experiment Station,	1,191	29.917	30.231	29.521	57.6	76.0	29	27.0	2	66.8	47.0	19.8	37.0	2	5.0	26
Chester,	West Chester,	455	29.965	30.288	29.596	60.3	82.5	1	35.0	2	70.3	51.0	19.3	29.5	1	11.0	25
Clarion,	Clarion— State Normal School,	1,530	....	....	....	56.2	80.0	24	29.0	7	65.7	44.9	20.8	35.0	31	11.0	14
Clearfield,	Grampian Hills,	1,450	....	....	....	57.1	80.0	24, 30	28.0	2	67.8	47.8	19.7	38.0	12	2.0	6
Clinton,	Lock Haven,	560	....	....	....	59.2	80.0	24	29.0	2	69.0	46.0	23.0	38.0	12	6.0	25
Columbia,	Catawissa (27 days),	491	....	....	....	58.7	78.5	13	33.0	2	68.5	49.0	19.5	....	....	....	....
Crawford,	Meadville,	1,300	....	....	....	53.5	78.5	30	30.0	3	64.6	44.0	20.6	34.0	3	9.0	6
Cumberland,	Carlisle,	480	....	....	....	60.1	83.0	1, 13	34.0	11, 12	72.9	48.8	24.1	41.0	12	7.0	25
Dauphin,*	Harrisburg,	361	29.982	30.290	29.600	60.4	79.0	13	38.0	2	70.0	51.6	18.4	30.0	17	9.0	25
Delaware,	Swarthmore— Swarthmore College,	190	29.963	30.260	29.604	60.9	82.0	19	38.5	2, 9	71.9	56.1	15.8	29.5	9	10.0	25
Erie,*	Erie,	681	29.930	30.300	29.611	53.0	79.0	25	34.0	2	62.0	45.0	17.0	35.0	3	6.0	6
Fayette,	Uniontown	1,000	29.937	30.199	29.653	62.4	86.0	29	34.0	2	73.3	49.4	23.9	45.0	18	9.0	20
Forest,‡	Tionesta,	1,057	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Franklin,*	Chambersburg— Wilson Female College,	618	29.972	30.209	29.625	59.8	82.0	13, 14	30.0	12	72.0	46.1	25.9	41.0	12	10.0	26
Fulton,	McConnellsburg,	875	....	....	....	60.4	80.0	13, 30	34.0	2	70.9	48.9	32.0	36.0	17	4.0	25
Greene,	Waynesburg,	750	....	....	....	63.4	86.0	30	....	....	....	....	....	....	....	....	....
Huntingdon,*	Huntingdon— The Normal College,	650	....	....	....	58.5	88.0	13	31.0	2	71.5	53.3	18.2	42.0	12	4.0	26
Indiana,	Indiana— State Normal School,	1,350	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lackawanna,*	Scranton,	....	....	....	....	58.4	78.0	24	32.0	8	67.5	49.3	18.2	36.0	1	6.0	2

Lancaster,	**Lancaster**,	418	29.976	30.203	29.457	60.3	80.0	14	34.0	2	71.0	49.8	21.2	33.	12	6 9	25
Lawrence,	**New Castle**,	982	. . . .	. . . .	. . . .	62.6	85.0	30	26.0	2	72.8	45.1	27.2	46.	2	18 0	19
Lebanon,	**Annville**—																
	Lebanon Valley College,	339	. . . .	. . . .	. . . .	63.9	85.0	19	42.0	2	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lehigh,	Coopersburg,	520	. . . .	. . . .	. . . .	59.8	83.0	1	35.0	2	71.5	49.3	22.2	34.0	31	10.0	4
Luzerne,	Drifton—																
	Drifton Hospital,	1,655	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lycoming,*	Nisbet,	550	. . . .	. . . .	. . . .	57 0	74.0	5	23.0	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mercer,*	Greenville—																
	Thiel College,	1,000	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mifflin,†	Lewistown,	500	. . . .	. . . .	. . . .	61.2	83.0	13, 31	31.0	2	72.3	46.6	25.7	48.0	13	5.5	26
Montgomery,	Pottstown,	150	. . . .	. . . .	. . . .	62.8	84.0	1	37.0	2, 9	73.1	52.7	20.4	32.0	1	7.0	4
Northampton,	Bethlehem,	360	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Perry,	New Bloomfield,	400	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Philadelphia,*	Philadelphia—																
	Signal Office,	117	29.990	30.310	29.610	62.8	84.0	19	39.0	2	72.1	53.4	18.7	29.0	13	9.0	11
Potter,	Coudersport,	1,670	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Schuylkill,	Girardville,	1,000	29.959	30.225	29.599	58.7	76.0	31	31.0	2	68.0	47.0	21.0	33.0	9	10.0	4
Snyder,	Selins Grove,	445	. . . .	. . . .	. . . .	60.8	81.0	24	34.0	3	70.8	39.1	31.7	40.0	2	20.0	8
Somerset,	Somerset,	2,250	. . . .	. . . .	. . . .	55.7	82.0	4	26.0	2	69.8	44.9	24.9	46.0	2	8.0	28
Sullivan,	Eagles Mere,	2,060	30.031	30.351	29.709	52.5	67.0	31	26.0	2	58.7	43.7	15.0	27.0	12	4.0	4
Tioga,	Wellsboro',	1,327	29.923	30.369	29.405	53.5	80.0	24	26.0	2	64.7	44.6	20.1	34.0	2	3.0	26
Union,*	Lewisburg,	450	. . . .	. . . .	. . . .	59.9	83.0	31	30.0	2	72.3	47.5	24.8	39.0	9	9.0	26
Warren,	Columbus,	1,410	. . . .	. . . .	. . . .	54.4	81.0	29	24.0	2	65.5	43.3	22.2	42.0	2	4.0	20
Washington,	Canonsburg,	950	. . . .	. . . .	. . . .	. . . .	86.0	. . . .	29.0	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Wayne,	Honesdale,	1,000	. . . .	. . . .	. . . .	56.4	76.0	24	29.0	2, 9	64.8	46.0	18.8	37.0	9	7.0	26
Westmoreland,	Greensburg,	1,175	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Wyoming,*	South Eaton,	660	. . . .	. . . .	. . . .	56.3	78.0	13	30.0	2, 9	66.6	46.0	20.6	35.0	9	8.0	26
York,*	York,	385	29.943	30.181	29.588	59.8	83.0	19	34.0	2	72.1	47.6	24.5	39.0	12	12.0	15

* Observations taken at 8 A. M., and 8 P. M.

† Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.		NUMBER OF DAYS.			WIND PREVAILING DIRECTION.			OBSERVERS.
				Total inches.	Number of days rainfall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Adams,*	Gettysburg,	...	...	8.10	15	6	7	18	S	S	S	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	81.8	55.0	5.85	20	6	8	17	SW	SW	SW	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	79.9	54.0	5.65	16	5	13	13	SW	SW	SW	Miss E. A. G. Apple.
Berks,*	Reading,	...	...	...	...	...	...	...	...	...	...	C. M. Dechant, C. E.
Blair,†	Altoona (29 days),	55.1	45.0	5 60	...	...	...	...	...	...	...	Dr. Charles B. Dudley.
Bradford,	Wysox,	...	...	...	...	...	...	...	...	...	...	Charles Beecher.
Bucks,	Quakertown,	76.6	51.0	6.55	12	8	10	13	SW	SW	S	J. L. Heacock.
Cambria,*	Johnstown,	80.7	52.2	6.90	23	7	9	15	SE	SE	SE	E. C. Lorentz.
Cameron,	Emporium,	...	...	9.61	14	9	8	14	W	W	W	T. B. Lloyd.
Carbon,*	Mauch Chunk,	...	...	8.11	16	10	12	9	NW	NW	NW	John J. Boyd.
Centre,	State College— Agricultural Experiment Station,	74.6	48.7	6.77	18	4	11	16	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	72.0	57.5	6.42	18	12	13	6	E	S	SE	Jesse C. Green, D. D. S.
Clarion,	Clarion— State Normal School,	78.8	49.5	7.20	...	...	...	...	SW	SW	SW	C. M. Thomas, B. S.
Clearfield,	Grampian Hills,	...	...	6.87	19	2	11	18	W	SW	SW	Nathan Moore.
Clinton,	Lock Haven,	...	...	7.30	17	6	13	12	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa (27 days),	...	...	7.41	10	...	...	...	...	...	...	Robert M. Graham.
Crawford,	Meadville,	80 4	47.6	7.04	17	5	17	9	S	S	S	J & B. H. Metcalf.
Cumberland,	Carlisle,	86.0	56.0	5.47	16	3	15	13	S	S	S	J. E. Pague.
Dauphin,*	Harrisburg,	66.8	48.2	6.61	17	6	13	12	E	E	E	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore— Swarthmore College,	78.0	53.0	5.59	13	3	9	19	N	SW	N	Prof. Susan J. Cunningham.
Erie,*	Erie,	80.0	47.0	6.40	20	5	9	17	W	W	W	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	...	...	8.08	17	8	17	6	...	...	...	Wm. Hunt.
Forrest,	Tionesta,	...	...	...	...	...	...	...	...	...	...	R. L. Haslet.
Franklin,*	Chambersburg— Wilson Female College,	83.0	53.4	5.56	17	9	7	15	...	...	...	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	78.6	52.5	7.90	16	9	12	10	W	NW	W	Thomas F. Sloan.
Greene,	Waynesburg,	...	...	4.90	14	10	9	12	...	...	...	Capt. W. C. Kimber.
Huntingdon,*	Huntingdon— The Normal College,	...	...	6.86	14	5	12	14	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana— State Normal School,	...	...	...	...	...	...	...	...	...	...	Prof. S. C. Schmucker
Lackawanna,*	Scranton,	69.8	49.6	4.77	16	3	7	21	S	S	S	C. A. Hinsdell.

Lancaster.	Lancaster.	86.3	56.2	7.04	12	9	12	10	NW	W	W	C. N. Heller.
Lawrence,	New Castle,	....	....	7.25	14	8	10	18	W	W	W	Wm. T. Butz.
Lebanon,	Annville— Lebanon Valley College.	8.34	59.8	....	....	4	12	15	W	W	W	Geo. W. Bowman, A M., Ph. D.
Lehigh.	Coopersburg.	....	....	7.93	12	7	15	9	SE	SW	SE	M. H. Boye.
Luzerne.	Drifton— Drifton Hospital.	....	....	....	....	....	....	....				H. D. Miller, M D.
Lycoming.*	Nisbet.	....	....	6.20	11	9	11	11	W		E	John S. Gibson, P. M.
Mercer,*	Greenville— Thiel College.	....	....	....	....	....	....	....				Prof S. H. Miller.
Mifflin.	Lewistown.	71.9	53.0	6.88	16	8	13	10	NW	NW	NW	Culbertson & Lantz.
Montgomery.	Pottstown.	76.0	54.0	7.61	10	15	8	8	W	W	W	Charles Moore, D. D. S.
Northampton.	Bethlehem.	....	....	....	....	....	....	....				Lerch & Rice.
Perry.	New Bloomfield,	....	....	....	....	....	....	....				Frank Mortimer.
Philadelphia.*	Philadelphia— Signal Office.	69.0	50.0	2.96	16	7	13	11	SE	SE	SE	Luther M. Dey, Sgt. Sig. Corps.
Potter.	Coudersport.	....	....	....	....	....	....	....				C. L. Peck.
Schuylkill.	Girardville.	....	....	12.41	16	15	7	9	NW	NW	W	E. C. Wagner.
Snyder,	Selinsgrove,	73.2	43.8	8.56	12	10	15	6	SE	SE	SE	J. M. Boyer.
Somerset.	Somerset.	82.5	50.9	8.90	14	2	14	15	NW	NW	NW	W. M. Schrock.
Sullivan,	Eagles Mere,	78.0	45.3	8.97	13	6	12	13	SW	SW	SW	E. S. Chase.
Tioga,'	Wellsboro'.	64.7	38.4	7.80	20	4	13	14	N	S	N	H. D. Deming.
Union.*	Lewisburg.	....	....	6.40	18	1	19	11	SW	SW	SW	F. O. Whitman.
Warren.	Columbus.	67.0	42.5	9.15	20	6	10	15	SW	SW	SW	Wm. Loveland.
Washington.	Canonsburg.	....	....	5.20	23	....	....	....				A. L. Runion, M. D.
Wayne.	Honesdale.	63.4	52.0	6.11	12	....	....	....				John Torrey.
Westmoreland,	Greensburg.	....	....	....	....	....	....	....				Hilary S. Brunot.
Wyoming.*	South Eaton.	....	....	7.47	15	7	10	14	S	S	S	Benj. M. Hall.
York.*	York.	80.5	52.0	6.65	11	15	8	8	NW		SW	Mrs. L. H. Greenwald.

* Observations taken at 8 A. M., and 8 P. M.

† Observations taken at 12 noon.

PRECIPITATION FOR MAY, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro'.	Harrisburg.	Sellinsgrove.
1.	.41	.39	. . .	.22	.29	.21	. . .	. . .	.25	. . .	.28	.50	.20	.02	.15	.08	.16	. . .	.12	.04	.10	.04	. . .	.12	.04	.34
2.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
3.	.02	.10	. . .	.12	. . .	. . .	. . .	. . .	.36	. . .	.18	.89	. . .	. . .	.01	. . .	.02	. . .	. . .	.17	. . .	.03	. . .	.05	. . .	.05
4.	.53	.70	. . .	1.15	.32	.33	. . .	. . .	1.71	.50	.34	.36	.40	.08	.34	.30	.21	.04	.19	.53	.10	.07	. . .	.42	.85	.75
5.	.53	.45	. . .	.35	.42	.55	. . .	. . .	.12	1.45	.52	. . .	.10	.10	.44	.37	.07	.18	. . .	.32	. . .	.56	. . .	.40	.38	.05
6.	.01	. . .	. . .	.01	.20	.58	. . .	. . .	.40	.36	.25	.55	.60	.50	.61	.62	.57	.50	1.18	.48	.55	.70	. . .	1.63	.26	1.16
7.	. . .	. . .	. . .	.01	.01	.10	. . .	. . .	.03	.10	. . .	. . .	.10	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
8.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.08	. . .	. . .	. . .	. . .	. . .	. . .	. . .
9.	.15	. . .	. . .	.20	.22	.12	. . .	. . .	.06	. . .	.10	. . .	.10	. . .	. . .	.06	.06	. . .	. . .	.05	. . .	.02	. . .	.02	. . .	. . .
10.	.91	1.35	. . .	1.35	.20	.36	. . .	. . .	.13	.62	.25	.54	.20	.50	.07	.14	.05	.03	.12	.02	.02	.11	. . .	.70	.04	. . .
11.	.01	. . .	. . .	. . .	.56	.48	. . .	. . .	.23	.43	.48	.62	.40	.40	.33	. . .	.20	.20	. . .	.35	. . .	.30	. . .	.34	.02	. . .
12.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.01	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.05	. . .	. . .
13.	.46	.20	. . .	.41	.27	.46	. . .	. . .	.23	. . .	.28	.58	.30	. . .	1.01	.58	.25	. . .	.12	.75	. . .	.66	. . .	.20	.28	. . .
14.	.30	.25	. . .	.16	.26	1.14	. . .	. . .	.33	.45	.30	.17	.50	.55	.52	.78	.28	.55	.48	.43	2.20	.90	. . .	1.36	.34	.18
15.	.01	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.30	. . .	. . .	. . .	.05	. . .	. . .	. . .	. . .	.16	. . .	.18	. . .	. . .	. . .	.10	.17
16.	. . .	.30	. . .	.02	.17	. . .	. . .	. . .	.01	. . .	.26	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
17.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
18.	.39	.30	. . .	.23	.01	.04	. . .	. . .	.01	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.80	. . .	. . .	. . .	. . .
19.	.08	. . .	. . .	.61	.18	.25	. . .	. . .	.35	. . .	.60	.67	.20	.35	.12	.48	.12	.10	. . .	.45	.05	. . .	. . .	.16	2.16	.09
20.	.80	2.50	. . .	1.20	.79	.87	. . .	. . .	.45	.44	.37	2.12	.60	.75	.98	.86	52	.40	1.98	.75	1.55	.86	. . .	1.94	.93	.15
21.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.34	. . .	. . .	. . .	. . .	. . .	. . .	.08	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
22.	.05	. . .	. . .	.05	.02	. . .	. . .	. . .	04	. . .	. . .	.03	.10	. . .	.05	.07	. . .	.03	.06	.04	. . .	.06	. . .	.05	.03	. . .
23.	1.25	.50	. . .	2.77	.40	1.15	. . .	. . .	.07	. . .	. . .	1.41	.40	.95	.85	.80	.79	.10	. . .	1.32	.10	1.24	. . .	.14	20	.04
24.	.01	.05	. . .	.01	.37	. . .	. . .	. . .	.11	1.95	1.42	. . .	.20	.55	. . .	. . .	.02	.48	.56	. . .	.05	.05	. . .	. . .	.04	. . .
25.	.40	.08	. . .	.17	.74	.08	. . .	. . .	1.60	62	.06	.77	1.20	. . .	.71	.40	1.20	. . .	.15	.68	. . .	. . .	. . .	.08	. . .	. . .
26.	. . .	. . .	. . .	. . .	.02	.30	. . .	. . .	36	.96	.60	.40	1.00	1.35	.67	.82	1.13	1.48	.35	.34	1.75	.89	. . .	.04	.82	.37
27.	. . .	. . .	. . .	.01	. . .	. . .	. . .	. . .	.01	.39	.31	. . .	. . .	.02	. . .	. . .	. . .	.26	. . .	.02	. . .	. . .	. . .	. . .	.08	.21
28.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
29.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
30.	.07	.08	. . .	.10	. . .	. . .	. . .	. . .	. . .	. . .	.17	. . .	.10	. . .	.09	. . .	.09	. . .	. . .	.08	. . .	. . .	. . .	.10	. . .	. . .
31.	.01	. . .	. . .	. . .	.40	1.01	. . .	. . .	.03	. . .	. . .	. . .	. . .	.13	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.01	. . .	. . .	.04	. . .
	6.40	7.25	. . .	9.15	5.85	8.06	. . .	. . .	6.90	8.90	6 87	9.61	6.76	7.02	6.95	6.36	5.82	4.47	5.55	6.77	6.65	7.30	. . .	7.80	6.61	3.56

PRECIPITATION FOR MAY, 1890—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Reading.	Pottstown.	West Chester.
1.	.23	.37	.14	.01		.32	.07	.15	.14			.20	.25
2.													.04
3.						.02							
4.	.42	.34	.65	.44		1.12	1.24	.13	.39			2.00	.96
5.	.10	.41	.28	.06		.21	1.78		.79				.38
6.	.80	1.18	.68	.27		.93	.48	.66	.95			.70	.67
7.									.01				
8.												.14	.36
9.			.28				.04						
10.	.10	.82	1.08	.01		.50	.04	.09	.08				
11.	.02	.78						.28	.43				.06
12.													
13.		.08	.82	.21		.50	1.89	.35	.06			.35	.31
14.	.36	.82	1.37	.87		.45	1.57	.99	1.33			.50	.73
15.	.58	.08		.12			.16	.02				.20	.52
16.		.19							.11				
17.													
18.													
19.		.28	.82	.99		2.51	1.68	.24	.39				
20.	1.75	.92	1.12	1.01			1.55	3.21	2.03			.60	.77
21.													
22.													.02
23	.01	.26	.46	.11			.16		.10				.04
24.													
25.			.37				.38						.02
26.	2.44	.35		2.66		.85	.86	.33	.59			2.60	1.00
27.	.23			.03			.35	.30				.32	.25
28.													
29.													
30.		.22	.63				.16	.09	.07				.03
31.													.01
	7.04	7.00	8.97	6.79	. . .	7.41	12.41	6.84	7.47	. . .	. . .	7.61	6.42

	Contesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.
1.	.35	.28	.19	.08	.11	.30	.14		.25	.10	.14	.18	.16
2.		.24					.11						
3.				.03									
4.	2.28	.40	.82	.84	.13	.10	.09	.15	.42	.20	.22		.31
5.	.16	.93	.26	.35	.95	.20	.08	.74	1.23	.58	.29	.46	.40
6.	.64	.56	.23	.30	.50	.66	.57	.65	.85	.51	.62	.54	.74
7.		.32											.35
8.	.20				.19	.49	.26	.14	.22	.36	.38	.34	.15
9.													
10.	.01		.32	.74			.01	.01	.07	.01	.04		
11.	.01	.02	.52				.02		.07	.06	.10	.08	.01
12.													
13.	.19			.29	.34	.20		1.08	.09				
14.	.77	.65	.50	1.07	.96	.30	.12	.13	.30	1.17	.57	.18	.03
15.	.36	.89	.25	.04	.21	.34	.45	.34	.65	.70	.50	.68	.11
16.						.33	.13						
17.													
18.													
19.			.41	.64						.23			
20.	.73	.84	.90	.60	.66	.64	.56	.69	.60	.84	.75	.45	.82
21.													
22.							.01						
23	.03												
24.													
25.								.03					
26.	2.01	.69	.84	1.13	2.25	.12	.04	1.82	1.84	2.23	1.70	1.55	1.65
27.	.01	1.01	.32		.23	1.90	.34	.15	.22	.30	.46	.45	.45
28.													
29.													
30.					.02	.01	.03	.06	.06		.02		
31.													
	7.85	6.89	5.56	6.11	6.55	5.59	2.96	5.99	6.87	7.29	5.79	5.41	5.18

PRECIPITATION FOR MAY, 1890—*Continued.*

	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	Centre Valley.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown.	Greensburg.	Tipton.	Coudersport.	Coopersburg.	Hulmeville.	Westtown.	Meadville.	Ligonier.	Scranton.
1.	.17	.87	.13						.30	.36	.09	.20	.01			.42	.08		.20		.12		.28	.19	.26	.20
2.	.01					.10																				
3.													.06						.05					.05		
4.	.25	.07	.28			.02		.35	.30	.60	.43		.66			.47	.42		.09		.89			.60	.61	.20
5.	.11		.21			.88		.65			.49	.80	.02			.43	.42		.05		.91			.50	.12	.24
6.	.98	.90	.53			.78		1.40	.50	1.26	.29	.90	.41			.55	.44		55		.47		.70		.37	.43
7.						.01		.09			.01		.11			.20	.03								.06	
8.	.31	.42	.37					.04				.20									.17		.50			
9.								.13					.03				.09							.22	.09	
10.	.03		.01			.03		.04	.45	.46	.02	.30	.04			.40	.06		.05				.05	1.31	.20	.08
11.	.02	.05									.23						.55		.05		.04				.33	.20
12.																										
13.	.16	.73						.34	.35	.50	.48	.50	.56			.40	1.22		.10					.22	.21	.02
14.	.05					.31		.20	.50	.99	.80	.70	.07			.29	.31		.23		2.18		.95	.21	.47	.75
15.	.53	.50	1.01			.26					.10		.01			.72					.26					.02
16.		1.22								.01													.83	.04	.01	.01
17.																										
18.																			.10					.26		
19.						.10		.84	.20	.31	1.07	.30	.87			1.86	.28		.11					.56	.15	.40
20.	.72	.06	.80			1.46		.90	.50	.80	1.41	.80	.62			.82	.59		.40		.50		.82	.72	.80	1.18
21.																								.05		
22.		.03				.05			.20	.02							.04							.03	.05	
23.						.06			.30	.53	.04	.80	.77			.37	.68		1.40					1.77	1.52	.01
24.						.19		.72	.45							.01								.04	.13	
25.								1.10	.20				1.24			.01	.63		.93					.21	1.00	
26.	.55	1.05				1.00		.80	.35		1.95	.70	.17			1.15	1.04		.60		2.03		1.76		.01	.47
27.	1.09	.55	2.21			.20		.15		.61	.60															.52
28.																										
29.																										
30.	.01	.05	.02					.15		.01	.10								.12		.04		.01		.01	.04
31.	.01					.02			.30																	
	5.00	6.50	5.57	. . .	5.20	5.47	. . .	7.90	4.90	6.40	8.11	6.20	5.65	5.00	. . .	8.10	6.88	. . .	5.03	. . .	7.93	. . .	5.90	7.04	6.79	4.77

FOR JUNE, 1890.

TEMPERATURE.

The mean temperature of 58 stations for June, 1890, was 70°.3, which is about 2° above the normal, and 3°.8 above the corresponding month of 1889.

The mean of the daily maximum and minimum temperatures 81°.8 and 58°.4 give an average daily range of 23° 4, and a monthly mean of 70°1.

Highest monthly mean, 73°.7 at Uniontown and Huntingdon.

Lowest monthly mean, 64°.2 at Dyberry.

Highest temperature recorded during the month, 97° on the 5th, at Carlisle, and 30th at Lynnport.

Lowest temperature, 33° on the 14th at Charlesville.

Greatest local monthly range, 31°.3 at Wilkes-Barre.

Least local monthly range, 14°.0 at Erie.

Greatest daily range, 47° at Lock Haven on 25th.

Least daily range, 2° at Wellsboro' on 21st.

From January 1, 1890, to June 30, 1890, the excess in temperature at Philadelphia was 71°.4, at Erie 42°.1 and at Pittsburgh 68°.5.

BAROMETER.

The mean pressure for the month, 30.00, is about .03 above the normal At the U. S. Signal Service Stations, the highest observed was 30.38 at Pittsburgh on the 9th, and the lowest 29.71 at Erie on the 12th.

PRECIPITATION.

The average rainfall 3.42 inches is a deficiency of nearly a half inch. Owing to local thunder-storms the fall was somewhat unevenly distributed, but the difference was not great when compared in large areas.

The largest totals reported in inches were Forks of Neshaminy 5.74, Columbus 5.66, Mauch Chunk 5.25 and Wilkes-Barre 5.07.

The smallest were Philadelphia 1.30 and Selinsgrove 1.36.

The heaviest general rains occurred on the 6th, 11th, 12th, 13th, 21st, 22d and 23d.

WIND AND WEATHER.

The prevailing direction of wind was from the west. Thunder storms were frequent and caused numerous losses to life and property. The weather was seasonable for growth, although the month was characterized by cool nights. A few light frosts occurred in the northern counties.

Average number: Rainy days, 9; clear days, 12; fair days, 11; cloudy days, 7.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for June, 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Least.	Date.
Adams.*	Gettysburg.	624	....	....	....	70.3	94.0	5	42.0	9	84.8	57.0	27.0	43.	9	9.0	16
Allegheny.*	Pittsburgh.	847	30.002	30.375	29.777	73.5	92.0	24	47.0	8	83.5	63.5	20.0	30.	1	11.0	12
Bedford.	Charlesville.	1,300	....	....	....	70.0	91.0	24	33.0	14	81.3	54.8	26.5	46.	14	7.0	25
Berks.*	Reading.	304	....	....	....	....	....	....	....	....			....	....	.	....	....
Blair.+	Altoona.	1,181	....	....	....	74.1	93.0	6	47.0	8, 9	84.	64.2	19.9	30.		8.0	7
Bradford.	Wysox.	718	30.014	30.379	29.796	67.2	90.0	5	40.5	1	80.	55.3	24.9	40.		9.5	21
Bucks.	Quakertown.	536	30.006	30.340	29.750	69.3	89.7	5	45.2	9	81	56.5	24.7	36.		11.0	21
Cambria.*	Johnstown.	1,184	30.039	30.404	29.813	69.9	88.0	5, 24	41.0	8	81.	58.2	23.4	35.	27	12.0	12
Cameron.	Emporium (27 days).	1,030	....	....	....	71.7	91.0	24	39.0	8	81	54.8	27.1	45.	2	14.0	21
Carbon.*	Mauch Chunk.	550	....	....	....	68.8	92.5	5	44.0	9	81	56.3	24.9	40.	9	9.0	17
Centre.	State College— Agricultural Experiment Station.	1,191	29.957	30.326	29.696	68.8	88.0	25, 26	43.0	8	79.	58.5	21.1	36.	9	5.0	16
Chester.	West Chester.	455	29.996	30.353	29.752	71.9	80.5	5, 25	51.0	8	80.	62.1	18.8	27.		11.5	16
Clarion.	Clarion— State Normal School.	1,530	....	....	....	....	....	....	....	....			....	.	.	....	....
Clearfield.	Grampian Hills.	1,450	....	....	....	70.0	90.0	5, 24	40.0	8	81.	61.7	19.8	36.0	9	6.0	6
Clinton.	Lock Haven.	560	....	....	....	70.7	92.0	5	42.0	8	82.	56.3	26.6	47.0	25	4.0	6
Columbia.	Catawissa.	491	....	....	....	71.0	90.0	5	50.0	11	82.	59.5	22.5	.	.	....	....
Crawford.	Meadville.	1,300	29.980	30.380	29.700	67.5	86.0	30	50.0	8	77.	....	....	.	.	....	....
Cumberland.	Carlisle.	480	....	....	....	72.2	97.0	5	44.5	8	86.	60.1	26.2	39.		10.0	19
Dauphin.*	Harrisburg.	361	30.004	30.350	29.768	72.1	92.0	26	51.0	8	82.	62.6	19.7	32.	9	4.0	16
Delaware.	Swarthmore Swarthmore College.	190	....	....	....	....	....	....	....	....		....	....	.	.	....	....
Erie.*	Erie.	681	29.970	30.370	29.710	68.0	85.0	3	46.0	8	75.0	61.0	14.0	22.		5.0	12
Fayette.	Uniontown.	1,000	30.090	30.297	29.427	73.7	91.0	24	43.0	8	83.7	62.6	21.1	36.		4.0	21
Forest.	Tionesta.	1,057	....	....	....	....	....	....	....	....			....		.	....	....
Franklin.*	Chambersburg— Wilson Female College.	618	....	....	....	....	....	....	....	....					.	....	....
Fulton.	McConnellsburg.	875	....	....	....	70.2	91.0	24	42.0	8	83.7	58.5	25.	40	9	8.0	16
Greene.	Waynesburg.	750	....	....	....	70.7	98.0	24	....	....	81.9				.	....	....
Huntingdon.*	Huntingdon— The Normal College.	650	....	....	....	73.7	98.0	5	39.0	8	84	63.	21	42.	27	7.0	20
Indiana.	Indiana— State Normal School.	1,350	....	....	....	....	....	....	....	....					.	....	....
Lackawanna.*	Scranton.	....	....	....	....	....	....	....	....	....					.	....	....

Lancaster.	Lancaster (17 days).	413	...	...	...	70.4	91.5	5	46.4	8	81.	58.2	23.3	...	...	...	...
Lawrence.	New Castle.	982	...	...	...	73.4	91.0	24, 30	38.0	8	83.	55.5	27.8	45.0	2	12.0	12
Lebanon.	Annville— Lebanon Valley College.	339	...	...	...	75.9	94.0	5	56.0	8	...	...	...	20.0	8	4.0	21
Lehigh.	Coopersburg.	530	...	...	...	70.0	90.0	5	50.0	1	80.	60.1	20.5	34.0	1	7.0	21
Luzerne.	Drifton— Drifton Hospital.	1,655	...	...	...	65.3	88.0	5	45.0	8	77.6	57.0	20.6	32.	9	5.0	21
Lycoming.*	Nisbet.	550	...	...	...	69.8	...	...	...	...							
Mercer.*	Greenville— Thiel College.	1,000	29.912	30.356	29.667	67.8	89.0	30	48.0	9	81.1	56.2	24.9	36.	9	6.7	12
Mifflin.	Lewistown.	500	...	...	...	70.1	95.0	5	45.0	8	86.4	54.6	31.8	43.	1	9.5	21
Montgomery.	Pottstown.	150	...	...	...	72.2	94.0	5	51.0	9	84.0	61.0	23.0	34.0	30	6.0	21
Northampton.	Bethlehem.	360	...	...	...	73.1	94.0	30	50.0	1, 2	82.0	60.4	21.6	35.0		8.0	17
Perry.	New Bloomfield.	400	...	...	...	...	...	...	...	...							
Philadelphia.*	Philadelphia- Signal Office.	117	30.001	30.360	29.800	73.4	92.0	25	55.0	8	83.0	64.2	18.	25.0	6	10.0	21
Potter.	Coudersport.	1,670	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Schuylkill.	Girardville.	1,000	29.968	30.292	29.749	70.0	89.0	6	47.0	1, 9	80.0	59.0	21.0	33.0	9	8.0	21
Snyder.	Selinsgrove.	445	...	...	...	73.5	92.0	5	...	...	83.4	63.5	19.9				
Somerset.	Somerset.	2,250	...	...	...	68.1	86.0	24, 25	45.0	20	79.2	58.	20.	34.0	9	7.0	7
Sullivan.	Eagles Mere.	2,060	30.041	30.439	29.870	65.4	80.0	24, 30	42.0	9	71.7	57.	14.	32.0	9	6.0	22
Tioga.	Wellsboro'.	1,327	29.957	30.309	29.683	64.5	90.0	5	40.0	8	80.4	56.	24.	34.0	1	2.0	21
Union.*	Lewisburg.	450	...	...	...	71.9	94.0	30	45.0	8	85.3	58.	26.	39.0	9	12.0	21
Warren.	Columbus.	1,410	...	...	...	67.5	90.0	30	34.0	8	79.8	55.	24.	45.0	2	4.0	12
Washington.	Canonsburg (2J days).	950	30.002	30.336	29.078	70.7	92.0	24	42.0	8	84.1	58.	25.	34.0	18	15.0	12
Wayne.	Honesdale.	1,000	...	...	...	66.2	87.0	4	44.0	1, 2	77.1	55.	21.	35.0		9.0	21
Westmoreland.	Greensburg.	1,175	...	...	...	...	...	...	...	...			...	...	...	...	...
Wyoming.*	South Eaton.	660	...	...	...	67.5	87.0	5	44.0	1	77.4	57.	19.8	32.0	3	6.0	21
York.*	York.	385	29.966	30.297	29.745	71.2	94.0	5	46.0	1	82.6	58.	24.1	40.0	3	8.0	16

* Observations taken at 8 A. M. and 8 P. M.   † Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.		NUMBER OF DAYS.			WIND. PREVAILING DIRECTION.			OBSERVERS.
				Total inches.	Number of days rain-fall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Adams,*	Gettysburg,	....	....	3.91	10	14	8	8	S	S	S	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	67.4	61.3	3.37	13	6	20	4	SW	SW	SW	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	77.7	61.5	1.87	6	4	18	8	W	NW	NW	Miss E. A. G. Apple.
Berks,*	Reading,	....	....	....	....	....	....	....	...	...	...	C. M. Dechant, C. E.
Blair,†	Altoona,	53.9	56.0	2.52	13	....	....	....	...	...	...	Dr. Charles B. Dudley.
Bradford,	Wysox,	81.4	60.2	4.75	11	6	10	14	SE	SE	SE	Charles Beecher.
Bucks,	Quakertown,	74.9	60.5	3.13	6	11	10	9	NW	SW	SE	J. L. Heacock,
Cambria,*	Johnstown,	81.2	63.1	2.72	12	5	18	7	SE	SE	SE	E. C. Lorentz.
Cameron,	Emporium (27 days),	....	....	4.85	10	10	12	5	W	W	W	T. B. Lloyd.
Carbon,*	Mauch Chunk,	....	....	5.25	9	14	11	5	NW	NW	NW	John J. Boyd.
Centre,	State College— Agricultural Experiment Station,	73.9	59.6	2.34	11	7	15	8	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	69.0	67.0	2.42	9	20	5	5	NW	NW	SE	Jesse C. Green, D. D. S.
Clarion,	Clarion— State Normal School,	....	....	....	....	....	....	....	...	...	...	C. M. Thomas, B.S.
Clearfield,	Grampian Hills,	....	....	2.74	10	11	10	9	SW	SW	SW	Nathan Moore.
Clinton,	Lock Haven,	....	....	3.61	12	14	12	4	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,	....	....	2.72	10	....	....	....	...	...	...	Robert M. Graham.
Crawford,	Meadville,	82.0	62.5	1.92	6	12	16	2	SE	S	S	J. & B. H. Metcalf.
Cumberland,	Carlisle,	82.5	66.9	2.90	8	7	15	8	W	S	S	J. E. Pague.
Dauphin,*	Harrisburg,	63.3	62.6	2.97	10	10	11	9	W	W	W	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore— Swarthmore College,	....	....	....	....	....	....	....	...	...	...	Prof. Susan J. Cunningham.
Erie,	Erie,	76.0	60.0	4.28	9	8	8	14	S	W	S	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	....	....	4.33	10	15	12	3	SW	SW	SW	Wm. Hunt.
Forest,	Tionesta,	....	....	....	....	....	....	....		...		R. L. Haslet.
Franklin,*	Chambersburg— Wilson Female College,	....	....	....	....	....	....	....		...		Miss Mary A. Ricker.
Fulton,	McConnellsburg,	77.4	62.0	4.87	7	15	11	4		...		Thomas F. Sloan.
Greene,	Waynesburg,	....	....	3.85	11	15	9	6		...		Capt. W. C. Kimber.
Huntingdon,*	Huntingdon— The Normal College,	....	....	4.18	8	13	3	14	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana— State Normal School,	....	....	....	....	....	....	....		...		Prof. S. C. Schmucker.
Lackawanna,*	Scranton,	....	....	....	....	....	....	....		...		C. A. Hinsdell.

Lancaster.	Lancaster (17 days).	....	....	2.20	....	8	6	3	SE	W	W	C. N. Heller.
Lawrence.	New Castle.	....	....	2.65	7	13	15	2	S	S	S	Wm. T. Butz.
Lebanon.	Annville— Lebanon Valley College.	81.3	70.5	....	....	8	19	3	W	W	W	Geo. W. Bowman, A. M., Ph. D.
Lehigh.	Coopersburg.	....	....	3.14	7	11	11	8	E	SE	E	M. H. Boye.
Luzerne.	Drifton— Drifton Hospital.	....	....	3.64	7	....	....	....			...	H. D. Miller, M. D.
Lycoming.*	Nisbet.	....	....	3.50	7	16	7	7	W	W	W	John S. Gibson, P. M.
Mercer.*	Greenville— Thiel College.	85.1	62.2	3.44	7	10	10	10	N	N	N	Prof. S. H. Miller.
Mifflin.	Lewistown.	66.6	64.6	3.76	12	12	13	5	NW	NW	NW	Culbertson & Lantz.
Montgomery.	Pottstown.	79.0	63.0	2.11	4	21	6	3	W	W	W	Charles Moore, D.D.S.
Northampton.	Bethlehem.	69.8	62.2	3.10	7	20	3	7	NW	S	W	Lerch & Rice.
Perry.	New Bloomfield.	....	....	....	....	....	....	....			...	Frank Mortimer.
Philadelphia.*	Philadelphia— Signal Office.	64.0	58.0	1.30	6	9	10	11	NW	NW	NW	Luther M. Dey, Sgt. Sig. Corps.
Potter.	Coudersport.	....	....	....	....	....	....	....	...	...	...	C. L. Peck.
Schuylkill.	Girardville.	....	....	4.56	8	19	10	1	W	W	NW	E. C. Wagner.
Snyder.	Selinsgrove.	73.7	63.2	1.36	4	19	6	5	SW	SW	SW	J. M. Boyer.
Somerset.	Somerset.	80.0	63.1	4.93	9	8	13	9	SW	SW	SW	W. M. Schrock.
Sullivan.	Eagles Mere.	77.5	57.9	3.72	7	9	10	11	SW	SW	SW	E. S. Chase.
Tioga.	Wellsboro'.	73.0	58.0	5.14	12	7	11	12	N	N	S	H. D. Deming.
Union.*	Lewisburg.	....	....	2.80	6	8	17	5	SW	SW	SW	F. O. Whitman.
Warren.	Columbus.	68.7	56.4	5.66	13	9	13	8	SW	SW	SW	Wm. Loveland.
Washington.	Canonsburg (29 days).	79.2	64.7	1.82	9	17	10	2	SW	SE	W	A. L. Runion, M. D.
Wayne.	Honesdale.	66.0	61.5	4.14	10	....	....	....			...	John Torrey.
Westmoreland.	Greensburg.	....	....	....	....	....	....	....			...	Hilary S. Brunot.
Wyoming.*	South Eaton.	....	....	2.81	10	12	18	5	S	S	S	Benj. M. Hall.
York.*	York.	75.0	61.2	3.29	10	18	10	2	NW	NW	NW	Mrs. L. H. Grenewald.

*Observations taken at 8 A. M. and 8 P. M. †Observations taken at 12 noon.

PRECIPITATION FOR JUNE, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Philipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	New Bloomfield.	Wellsboro'.	Harrisburg.	Selinsgrove.
1.																		.02								
2.																										
3.										.28		15			.15	.18	.27	.20		.06				1.04		
4.	02			15																						
5.	18		.25	.02							.06						.15							.14		
6.	.04	05	.13	.52	.56	02			40	.40	.15	.84	.80	1.45	.48		.66	.08		.33	.50	.51		2.60	.24	.22
7.			.01	.20	.01						.03	.16						.15			.05					
8.																										
9.																										
10.	59			.04	.01						.22						.11			.01				.10		
11.	88	.50		1.16	.05						.03	12		05	.13			.20		.07	.08	.01		.05	.10	
12.	1.49	.60	69	1.69	17	48			33	1.05	.42	.99	.20	.10	.54	.36	.31	.25		.62	.73	.30		.20	1.88	.29
13.				.14	.02	19			47		.15	.07	.10	.90	.28			.28		.15		.40		.36	.02	
14.						02				.63				.12							.20	.24		.06		
15.										1.33																
16.				.14	1.24				.09			.07	.10		.09	.11	.30	.10		.04	.14	.64			.11	
17.		.05	15	.49		92			.05	.06	.34		.60				.12				.02			.20		
18.					.04				.03									.03								
19.																										
20.																										
21.	.25	.65	50	.63	.30	44			12	.33	.13	.99	.10	.03	.23	.13	99	.13		.15		.50		.26	.28	.80
22.	.04	.75		.28	.87	48			28	.15	.03	.10	.90	.05	.44	.45	27			.01	.02	.07		.05	.04	
23.					.02				23	.10			.30	.02	.38	.05		.22			1.35	.05		.08	.17	
24.																						.41				.05
25.						14			.28				.20								.20				.12	
26.																										
27.																										
28.	.14			.20	.05							.36			.04		27			.48		.05				
29.		.05			.03	.54			.83		1.18		.20		.51	.55	85	.74		.42		.43			.01	
30.													.10			.35		.12								
31.																										
	4.23	2.65	3.44	5.66	3.37	4.38	. . .	. . .	2.72	4.33	2.74	4.85	4.60	2.72	3.27	4.18	4.30	2.52	. . .	2.34	3.29	3.61	. . .	5.14	2.97	1.36

PRECIPITATION FOR JUNE, 1890—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton	Drifton.	Reading.	Pottstown.
1.												
2.												
3.					.05			.01				
4.		.86	.42		.66				.41			
5.					82	.20	.12	1.15				
6.		1.18	.78	32	.05	.56	14	.81	.32			10
7.		.04		03				.08				
8.												
9.												
10.			.01			.02						
11.		.02	.22		.28	1.00	.70	.76	.07			.53
12.		.44	.79	1.61	.18	.75	1.49		.69			.02
13.		.48	.82	.08	.21	.03	.15	.67	.35			
14.		.04			18	.02		.53	.01			
15.												
16.						.07						
17.					.06							
18.		.04										
19.												
20.												
21.		77	.68	71	.80		.67	.88	.90			.46
22.				05		.02			.02			
23.		02				.05	.47	.18				
24.		.48			.46		.82		.03			
25.												
26.												
27.												
28.									.01			
29.												
30.												
31.												
	. .	4.37	3.72	2.80	4.75	2.72	4.56	5.07	2.81	. . .	. . .	2.11

	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Seisholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.
1.														
2.														
3.														
4.				.20	.20						.08			
5.				.23	.43						.76	.30		
6.	.11	.08	.09	.58	.73	.63		.07	1.00	.18	.89	.77	.34	
7.														
8.														
9.														
10.														
11.				.16	.15	.05								
12.	1.55	2.40	.76	.74	1.27	1.61		.48	1.57	1.86	77	.56	3.78	1.57
13.	.09	.02	.11	.92	.08	.11		.02	.04	.30	33	.14	.16	.05
14.					.06						45	.47	.67	
15.	.03											.05		
16.	.02													
17.														
18.			.15											
19.														
20.														
21.	.58	.54	.48	.87	.93	.56		.59		.41	58	.51	.64	.56
22.	.02		.02	.10				.01		.03	20	09		
23.		.03	.03	.35	.25						11			
24.	.01		.93		.04									.01
25.	.01		.02	.09		.17		.13						
26.														
27.														
28.														.01
29.														
30.														
31.														
	2.42	3.07	2.59	4.24	4.14	3.13	. . .	1.30	2.61	2.78	5.12	3.89	5.59	2.19

PRECIPITATION FOR JUNE, 1890—*Continued.*

	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown.	Greensburg.	Tipton.	Coudersport.	Coopersburg.	Hulmeville.	Westtown.	Meadville.	Ligonier.	Scranton.
1.																									
2.																									
3.							.26		.12			.10				.22		.04							
4.																									
5.	.07		.28		.04					.03															
6.	.94	1.00	.50	.58	.08	10	.55		.35	.25	.70	.49	1.00		1.05	37		.03		.47		.11	.49	.56	
7.															.07	.03									
8.																									
9.																									
10.																		.10							
11.	.04		2.00	.58						.07	.20				.68			.15		.35		1.65	.44		
12.	3.99	.60	.08	.86	.46	.99	.70		1.42	2.71	.10	.55	2.40		.44	.85		.25		1.35		.52	.34	.30	
13.	.03			.21	.09	.21	.78		.29	.16	.30							.20							
14.				.02					.37			.02				.02				.09				.13	
15.	.02									.01						.04									
16.						.06			.25		.70	.30			.64	.02						.05		.09	
17.					.03										.01								.04		
18.												.05								.15		.05			
19.																									
20.																									
21.	.64	.50	.71	.80	.60	.22				1.10	.50		1.00		.03	.35		.25		.71			.58	.17	
22.		.07	.01		.52		.70					.36				.80		.24		.02			.03	.09	
23.				.05		.50	1.18			.87	1.00				.73	.13		.60				.45			
24.										.05															
25.		.10				.67									.04										
26.																									
27.																									
28.	.01															.72									
29.						.22									.22	.21									
30.							.70																		
31.																									
	5.74	2.27	3.58	3.10	1.82	2.97	4.87	...	2.80	5.25	3.50	1.87	4.40	...	3.91	3.76	...	1.86	...	3.	...	2.83	1.92	1.34	...

FOR JULY, 1890.

TEMPERATURE.

The mean temperature of 59 stations for July, 1890, was 70°.8, which is about 1°.5 below the normal, and 1°.4 below the corresponding month of 1889.

The mean of the daily maximum and minimum temperatures 82°.3 and 59°.1 give an average daily range of 23°.2, and a monthly mean of 70°.7.

Highest monthly mean, 75°.1 at Rimersburg.

Lowest monthly mean, 64°.8 at Dyberry.

Highest temperature recorded during the month, 101° on the 8th, at Carlisle and York.

Lowest temperature, 33° on the 6th at Huntingdon.

Greatest local monthly range, 33°.0 at Huntingdon.

Least local monthly range, 14°.9 at Rimersburg.

Greatest daily range, 56° at Huntingdon on 7th.

Least daily range, 3° at Selinsgrove on 2d, and Ligonier on 9th.

From January 1, 1890, to July 31, 1890, the excess in temperature at Philadelphia was 666°, at Erie 382° and at Pittsburgh 682°.

BAROMETER.

The mean pressure for the month, 30.03, is about .07 above the normal. At the U. S. Signal Service Stations, the highest observed was 30.31 at Erie on the 21st, and the lowest 29.716 at Philadelphia on the 3d.

PRECIPITATION.

The average rainfall, 3.52 inches for the month, is a deficiency of over a-half inch. The distribution was unequally divided, and in some sections growing crops suffered from drouth.

The largest monthly totals in inches were Lynnport, 6.40; Girardville, 6.36 and West Chester, 6.27.

The least were Phillipsburg, 0.74 and Erie, 0.76.

WIND AND WEATHER.

The prevailing direction of wind was from the west. The month was characterized by extremes of heat and cold. Several of the stations reported light frosts on the 21st. The weather was favorable for the harvesting of grass and grain, and unusually large crops of hay were secured.

Average number.—Rainy days, 8; clear days, 13; fair days, 11; cloudy days, 7.

Correction.—From January 1, 1890, to June 30, 1890, the excess in temperature at Philadelphia was 714°, at Erie, 421°, and at Pittsburgh, 685°.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for July, 1890.*

COUNTY.	STATIONS.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Least.	Date.
Adams.*	Gettysburg.	624	. . . .	. . . .	. . . .	73.8	100.0	8	41.0	21,22	86.5	59.5	27.0	48.0	22	9.0	24
Allegheny.*	Pittsburgh.	847	30.024	30.290	29.730	74.0	94.0	8	53.0	10	84.1	63.9	20.2	31.9	6	9.0	23
Bedford.	Charlesville (30 days)	1,300	. . . .	. . . .	. . . .	70.9	97.0	8	40.0	11	82.3	56.0	26.3	41.5	11	10.5	24
Blair.†	Altoona.	1,181	. . . .	. . . .	. . . .	74.1	97.0	8	48.0	21	84.3	63.9	20.4	29.0	18	8.0	25
Bradford.	Wysox.	718	30.041	30.344	29.776	68.3	97.0	8	38.0	21	82.1	56.1	26.0	37.0	21	6.5	13
Bucks.	Quakertown.	536	30.040	30.260	29.720	69.7	96.0	8	42.0	21	82.1	57.5	24.6	37.2	6	7.5	13
Cambria.*	Johnstown.	1,184	30.048	30.319	29.677	71.8	93.0	8	45.0	21	82.8	59.7	23.1	34.0	6	11.0	24
Cameron.	Emporium (27 days).	1,030	. . . .	. . . .	. . . .	74.4	94.0	7,8	38.0	22	85.4	56.1	29.3	51.0	22	11.0	24
Carbon.*	Mauch Chunk.	550	. . . .	. . . .	. . . .	69.0	95.0	8	42.0	22	81.0	57.0	24.0	35.0	7	8.0	2
Centre.	State College- Agricultural Experiment Station,	1.191	29.981	30.300	29.637	69.7	94.0	8	41.0	21	80.5	58.7	21.8	33.0	11	11.0	24
Chester.	West Chester.	455	30.136	30.272	29.685	71.8	96.0	8	51.0	21	81.0	63.0	18.0	26.0	8	7.0	13
Clarion.	Clarion— State Normal School.	1,530	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Clearfield.	Grampian Hills.	1.450	. . . .	. . . .	. . . .	69.7	96.0	31	42.0	21	81.8	59.2	22.6	34.0	7	8.0	24
Clinton.	Lock Haven.	560	. . . .	. . . .	. . . .	71.1	97.0	8	42 0	21	83.2	57.0	26.2	49.0	15	5.0	2
Columbia.	Catawissa.	491	. . . .	. . . .	. . . .	71.5	96.0	8	48.0	22	82.0	61.0	21.0	33.0	11	8.0	24
Crawford.	Meadville	1.300	29.950	30.280	39.660	67.8	91.0	31	47.0	21	78.4	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Cumberland.	Carlisle (27 days).	480	. . . .	. . . .	. . . .	71.9	101.0	8	43.0	20	88.2	61.2	27.0	38.5	6	11.0	13
Dauphin.*	Harrisburg.	391	30.042	30.296	29.726	73.0	96.0	8	50.0	2	82.2	63.2	19.0	29.0	15	5.0	13
Delaware.	Swarthmore-- Swarthmore College.	190	30.033	30.240	29.732	72.4	96.0	8	50.0	22	82.0	62.4	19.6	26.7	23	8.0	14
Erie.*	Erie.	681	29.990	30.310	29.670	71.0	94.0	8	50.0	21	78.0	63.0	15.0	26.0	17	6.0	9
Fayette.	Uniontown.	1,000	30.080	30.226	29.820	72.9	94.0	8	48.0	10	83.7	62.2	21.5	34.0	6	10.0	18
Forest.	Tionesta.	1,057	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Franklin.*	Chambersburg— Wilson Female College.	618	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Fulton.	McConnellsburg.	875	. . . .	. . . .	. . . .	71.0	97.0	8	45.0	11	83.8	59.4	24.4	30.0	12	12.0	24
Greene.	Waynesburg.	750	. . . .	. . . .	. . . .	71.4	92.0	8,15	54.0	20	82.8	65.3	17.0	29.0	12	6.0	23
Huntingdon.*	Huntingdon— The Normal College (30 days).	650	. . . .	. . . .	. . . .	69.0	98.0	8	33.0	6	85.5	52.5	33.0	56.0	7	10.0	4
Indiana.	Indiana— State Normal School.	1,350	30.077	30.311	29.828	73.0	94.0	31	41.0	11	83.7	56.1	27.6	40.5	11	16.0	12
Lackawanna.*	Scranton.	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Lancaster.	Lancaster.	413	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .

Lawrence.	New Castle,	283	. . . .	. . . .	. . . .	73.4	95.0	8	38.0	21		55.		. . . .	. . . .	. . . .
Lebanon.	Annville—															
	Lebanon Valley College.	339	. . . .	. . . .	. . . .	76.7	102.0	8	63.0	20	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Lehigh,	Coopersburg.	530	. . . .	. . . .	. . . .	70.4	96.0	8	48.0	21	81.1	60.	20.3	30.0	11	8.0	13
Luzerne,	Drifton—															
	Drifton Hospital,	1,655	. . . .	. . . .	. . . .	65.8	90.0	8	45.0	22	77	56.	20.6	33.0	22	10.0	
Lycoming.*	Nisbet,	550	. . . .	. . . .	. . . .	69.0	98.0	8	42.0	21							
Mercer.*	Greenville—															
	Thiel College,	1,000	29.989	30.268	29.648	69.1	95.0	31	38.0	21	82.4	55.	26.5	39.0	22	13.0	26
Mifflin.	Lewistown,	500	. . . .	. . . .	. . . .	74.8	100.0	8	46.0	22	85.8	61.	24.7	42.0		15.0	13
Montgomery,	Pottstown.	150	. . . .	. . . .	. . . .	72.4	99.0	8	51.0	22	84.9	63.	21.8	32.0		5.0	2
Northampton.	Bethlehem.	360	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .							
Philadelphia.*	Philadelphia—															
	Signal Office,	117	30.056	30.287	29.716	74.6	97.0	8	54.0	21	83.	65.	17.	26.0		5.	13
Potter,	Coudersport,	1,670	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .					
Schuylkill,	Girardville,	1,000	30.018	30.282	29.722	69.6	92.0	8	44.0	21	79.0	58.	21.0	31.0	1	7.0	24
Snyder,	Selinsgrove,	445	. . . .	. . . .	. . . .	73.5	99.0	8	52.0	21	84.3	62.	21.6	26.0	22	3.	2
Somerset.	Somerset,	2,250	. . . .	. . . .	. . . .	67.7	93.0	8,15	40.0	20,21	81.	54.	26.7	46.0	6	12.	26
Sullivan,	Eagles Mere,	2,060	30.062	30.268	29.766	66.5	88.0	8	45.0	10	72.9	58.	14.6	27.0	31	4.	24
Tioga,	Wellsboro',	1,327	29.992	30.346	29.636	65.2	94.0	8	35.0	21	77.1	56.3	20.	33.0	21	4.	24
Union.*	Lewisburg,	450	. . . .	. . . .	. . . .	72.6	100.0	8	44.0	21	85.3	60.0	25.	39.0	11	1.	24
Warren.	Columbus,	1,410	. . . .	. . . .	. . . .	67.8	92.0	8	36.0	21	80.3	55.2	25.	44.0	11	8.0	9
Washington,	Canonsburg,	950	30.024	30.250	29.748	70.7	97.0	8	40.0	9	83.5	55.5	28.	41.0	15	11.0	24
Wayne,	Honesdale,	1,000	. . . .	. . . .	. . . .	66.5	89.0	8	40.0	21	76.6	56.5	20.1	32.0	7	5.0	2
Westmoreland,	Ligonier,	1,750	. . . .	. . . .	. . . .	73.4	94.0	8	40.0	21	85.0	57.0	28.0	42.0	11	3.0	
Wyoming.*	South Eaton,	660	. . . .	. . . .	. . . .	68.4	92.0	8	43.0	21	87.3	58.5	19.8	31.0	9	6.0	
York.*	York,	385	29.973	30.225	29.736	72.7	101.0	8	43.0	21	85.2	60.2	25.	36.5	22	6.0	

*Observations taken at 8 A. M and 8 P. M

†Observations taken at 12 noon

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATIONS.	Relative humidity.	Dew point.	PRECIPITATION. Total inches.	PRECIPITATION. Number of days rain fall.	NUMBER OF DAYS. Clear.	NUMBER OF DAYS. Fair.	NUMBER OF DAYS. Cloudy.	WIND. PREVAILING DIRECTION. 7 A. M.	WIND. PREVAILING DIRECTION. 2 P. M.	WIND. PREVAILING DIRECTION. 9 P. M.	OBSERVERS.
Adams,*	Gettysburg,			2.78	9	16	6	9	S	S	S	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	62.8	59.0	2.22	15	11	15	5	SW	SW	SW	Oscar D. Stewart, Sgt. Sig. Crops.
Bedford,	Charlesville (30 days),	82.9	65.4	1.53	6	16	9	6	SW	SW	SW	Miss E. A. G. Apple.
Blair,*	Altoona,	80.1	54.0	3.22								Dr. Charles B. Dudley.
Bradford,	Wysox,	81.4	61.4	3.62	9	12	13	6	SE	SE	SE	Charles Beecher.
Bucks,	Quakertown,	77.4	62.2	5.50	15	12	9	10	SW	SW	SW	J. L. Heacock.
Cambria,*	Johnstown,	78.8	62.6	1.87	7	10	17	4	S	S	S	E. C. Lorentz.
Cameron,	Emporium (27 days),			4.87	9	12	9	6	W	W	W	T. B. Lloyd.
Carbon,*	Mauch Chunk,			5.79	9	15	10	6	NW	NW	NW	John J. Boyd.
Centre,	State College— Agricultural Experiment Station,	69.1	58.9	2.44	8	11	11	9	N	W	W	Prof. Wm. Frear.
Chester,	West Chester,	71.0	62.0	6.27	14	18	6	7	SW	S	SE	Jesse C. Green, D. D. S.
Clarion,	Clarion— State Normal School,											C. M. Thomas, B. S.
Clearfield,	Grampian Hills,			3.37	9	10	13	8	W	SW	W	Nathan Moore.
Clinton,	Lock Haven,			2.85	10	19	4	8	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,			3.58	8							Robert M. Graham.
Crawford,	Meadville,	76.2	60.1	2.76	7	12	15	4	S	S	S	J. & B. Metcalf.
Cumberland,	Carlisle (27 days),	88.0	68.0	1.91	5	9	18	5	W	S	SW	J. E. Pague.
Dauphin,*	Harrisburg,	63.6	59.3	2.80	10	11	10	10	W	W	W	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore— Swarthmore College,	75.0	64.0	3.67	8	2	16	13	NW	SW	SW	Prof. Susan J. Cunningham.
Erie,*	Erie,	70.0	60.0	0.76	8	12	12	7	S	S	S	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,			5.05	7	19	11	1	SW	SW	SW	Wm. Hunt.
Forest,	Tionesta,											R. L. Haslet.
Franklin,*	Chambersburg— Wilson Female College,											Miss Mary A. Ricker.
Fulton,	McConnellsburg,	73.8	60.0	3.12	8			6	S	W	W	Thomas F. Sloan.
Greene,	Waynesburg,			2.50	7							Capt. W. C. Kimber.
Huntingdon,*	Huntingdon— The Normal College (30 days),			4.56	5	17	6	8	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana— State Normal School,	70.8	61.3	2.05	7	13	13	5	SW	W	NW	Prof. S. C. Schmucker.
Lackawanna,*	Scranton,											C. A. Hinsdell.
Lancaster,	Lancaster,											C. N. Heller.

Lawrence,	New Castle,	. . . .	. . . .	1.55	6	20	6	5	S	S	S	Wm. T. Butz.
Lebanon,	Annville— Lebanon Valley College,	82.4	71.4	. . . .	. . . .	9	17	8	W	SW	SW	Geo. W. Bowman, A.M., Ph.D.
Lehigh,	Coopersburg,	. . . .	. . . .	5.53	11	14	8	9	SE	SE	SE	M. H. Boye.
Luzerne,	Drifton— Drifton Hospital,	. . . .	. . . .	5.92	9	. . . .	. . . .	. . . .	. . .	. . .	. . .	H. D. Miller, M.D.
Lycoming,*	Nisbet,	. . . .	. . . .	3.80	9	. . . .	. . . .	. . . .	W	. . .	SE	John S. Gibson, P. M.
Mercer,*	Greenville— Thiel College,	89.2	64.6	2.52	7	10	14	7	SW	. . .	N	Prof. S. H. Miller.
Mifflin,	Lewistown,	74.9	66.9	2.47	9	16	7	8	NW	W	W	Culbertson & Lantz.
Montgomery,	Pottstown,	78.0	63.0	5.45	8	17	8	6	NW	SW	W	Charles Moore, D.D.S.
Northampton,	Bethlehem,	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	Lerch & Rice.
Philadelphia,*	Philadelphia— Signal Office,	68.4	61.2	4.03	21	8	13	10	N	N	N	Luther M. Dey, Sgt. Sig. Corps.
Potter,	Coudersport,	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	C. L. Peck.
Schuylkill,	Girardville,	. . . .	. . . .	6.36	11	21	3	7	W	W	W	E. C. Wagner
Snyder,	Selinsgrove,	75.0	59.0	3.58	9	4	16	11	SE	SE	SW	J. M. Boyer.
Somerset,	Somerset,	77.2	62.6	2.36	6	10	15	6	NW	NW	NW	W. M. Schrock.
Sullivan,	Eagles Mere,	82.0	61.5	4.24	9	12	9	10	SW	SW	SW	E. S. Chase.
Tioga,	Wellsboro',	65.6	58.4	2.65	12	8	14	9	N	NW	NW	H. D. Deming.
Union,*	Lewisburg,	. . . .	. . . .	3.79	8	9	18	4	SW	SW	SW	F. O. Whitman.
Warren,	Columbus,	65.0	55.2	3.95	11	12	14	5	SW	SW	SW	Wm. Loveland.
Washington,	Canonsburg,	79.0	64.0	3.93	8	15	11	5	SW	W	E	A. L. Runion, M.D.
Wayne,	Honesdale,	64.8	57.0	4.72	10	. . . .	. . . .	. . . .	. . .	. . .	. . .	John Torrey.
Westmoreland,	Ligonier,	70.0	59.0	2.47	7	19	10	2	. . .	. . .	. . .	J. T. Ambrose.
Wyoming,*	South Eaton,	. . . .	. . . .	2.72	8	11	16	4	S	. . .	NW	Benj. M. Hall.
York,*	York,	76.6	63.2	1.77	7	17	9	5	NW	NW	NW	Mrs. L. H. Grenewald.

*Observations taken at 8 A. M. and 8 P. M. +Observations taken at 12 noon.

PRECIPITATION FOR JULY, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	Wellsboro.	Harrisburg.	Selinsgrove.
1.	.04	.59	.15	.10	.72	1.34			.05	.20	1.40			*											
2.	.01	.28	1.38	.87	.02				.01		.48			*	.61	.73		.05		.47	.19	.95	.28	.40	.56
3.					.46									*								.05	.04	.37	
4.	.29	.40	.16	.18	.11	.73		.70	.35	.15	.06	.17	.40	*	.13	.11	.18			.07		.01	.02		
5.														*				.81							
6.														*											
7.														*											
8.	.18		.17	.80							.13	.13											.35		.01
9.			.13		.11									.15						.25		.38			
10.																									
11.																									
12.																									
13.				.07	.01						.45									.02	.06			04	.01
14.																									
15.				.38		1.93		.05		.10		.15			2.20	*				1.13	.03		.45	30	.45
16.					.02	.04					.10			.12		1.85					.52			18	
17.	.12		.11	.23	.01			.15			.08	.10			1.30	.89	1.38					.75	.32		.74
18.							*					*		.09				1.60							
19.												*											.02		
20.												*													
21.												*													
22.																									
23.		.15		.04	.10	.26		.10	.01																
24.	.10		.42	1.27	.37	1.13		.90	.88	1.15	.60	.80	.90	.38	.51		.53	.45		.28	.60	.26	.08	42	.19
25.	.01	.05		.01	.01	.22		.15	.47	.70	.07	2.20	.20		.22			.08		.18	.07	.29	.70	23	.24
26.	.01								.10	.06		.70	.10		.07		.28	.17		.04	.30	.10	.34	50	.38
27.																.98									
28.																						.02		22	
29.		.08			.28							.42										.04	.05		.01
30.												.20						.05							
31.				.09																					
	.76	1.55	2.52	3.95	2.22	5.65	...	2.05	1.87	2.36	3.37	4.87	1.60	0.74	5.04	4.56	2.37	3.22	...	2.44	1.77	2.85	2.65	2.80	3.50

* No record.

PRECIPITATION FOR JULY, 1890—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox	Catawissa.	Girardville.	Wilkes-Barre.	South Easton.	Drifton.	Pottstown.	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Seisholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.
1.					.90									.50											
2.		.31	1.28	80	.24	.45	1.20	.47	1.33	1.03	1.00	.77	.63	.48	1.01	.72	1.96	.65	.68	.66	1.36	1.47	1.29	1.00	.67
3.		.30	24	19	.11	.05	.48	.09	.16	1.13	.15	.61	.01	.38	.50	1.31	.20	.05	.26		.29	1.66	.52	.81	48
4.				01				.02		.02		.10		.28	.11	.33	.01					.05			
5.												.08					.02								
6.																									
7.																									
8.			28		16	.34																			
9.		.07					.07	.12	.01						.02										
10.																									
11.																									
12.																	.08								
13.		.05	.05			.08						.15					.10	.06	.22		.05	.09	.05	.03	
14.												.03				.08									
15.		1.36	1.28	.86	75	.91		3.25	.25	.61	.65	.52	.60		.06		.12			.56	.04				.35
16.				.01			.37	04				.23	.14	.39		.58	.03	.05	.06		.27	.06	.05	.01	
17.		.31	.37	.04	46	1.05	1.73	12	.21	1.08	1.20	1.00	.50		37		.40		.13	.58	1.08	.85	.59		1.10
18.								55				.18	.01	.45		.01	.02	.00	.40		.04		.19	.06	
19.																									
20.																									
21.																									
22.																									
23.																									
24.		.05	.47	.44	12	.41	.55	48	.11	.51	.35	35	.29	.33	.29	.25	.27		.02	.32	.17	.10	.10		
25.		.06	.22	.71	05		.56	21	.23	.93	.65	90	.67	.92	.85	.78	1.01	75	.50	.76	.97	1.13	1.22	1.00	1.51
26.				.25		.29	1.18	43	.42	.61	25	18	75	1.18	23	.64	1.10	77	1.03	1.00	1.00	1.43	1.19	1.02	
27.																									
28.							.10			.05			04	.04			.10		.02						
29.			.02				.08				20	22	13	.27	.01	.03	.13	.35	.71	.18	.06	.06	.26	.72	.08
30.				.05			.04																		
31.					.83																				
	. . .	2.51	4.24	3.36	3.62	3.58	6.36	5.78	2.72	5.92	5.45	6.27	3.77	5.17	4.45	4.73	5.50	3.67	4.08	5.01	5.39	6.90	5.46	4.65	4.30

PRECIPITATION FOR JULY, 1890—*Continued.*

	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Tionesta.	Gettysburg.	Lewistown.	Greensburg.	Tipton.	Condersport.	Coopersburg.	Westtown.	Meadville.	Ligonier.	Scranton.
1.					.85			.30				.25						.80					.25	
2.	.70	.50	1.28		.02	.22			.40	1.79	.20				.26	.77				1.70		.58		
3.	.79	.20	.50			.05			.02	.15					.08	.32				.40				
4.		.35					.30	.30		.01		.01			.10	.05		.70				.56	.40	
5.		.05			.58															.01				
6.																								
7.																								
8.																						.35		
9.									.16		.50					.04						.44		
10.																								
11.																								
12.												*												
13.	.09	.30	.05												.06					.08				
14.						.03																		
15.	.01	.14			1.04		.19		1.80	.80	.90							.12		.08			.10	
16.		.10			.76	.25	.27	.50			.40					.42								
17.	.32	.77	.80				.46	.20	.81	.98	.80					.02		.21		.44				
18.		.08					.41								.11	.02								
19.																								
20.																								
21.																								
22.						*																		
23.					.08	*		.25																
24.	.02	.05			.45	*	.85	.60	.41	.83	.30	.94			1.03	.20		.12		.24		.10	1.27	
25.		.70				*	.47	.35	.01	.90	.30	.09			.40	.20				.97		.37	.01	
26.	1.54	.02	2.47			1.36	.17		.18	.27	.20	.12			.55	.42				1.01			.37	
27.																								
28.	.01	.02													.17	.01				.31			.07	
29.	.93	.85	.28		.15					.06	.20	.12			.02					.29				
30.																								
31.																						.36		
	4.41	5.18	5.38	. . .	3.93	1.91	3.12	2.50	3.79	5.79	3.80	1.53	6.40	. . .	2.78	2.47	. . .	1.85	. . .	5.53	. . .	2.76	2.47	. . .

* No record.

FOR AUGUST, 1890.

TEMPERATURE.

The mean temperature of 58 stations for August, 1890, was 68°.4 which is about 2°.0 below the normal and 1°.1 above the corresponding month of 1889.

The mean of the daily maximum and minimum temperatures 79°.2 and 58°.5 give an average daily range of 20°.7 and a monthly mean of 68°.8.

Highest monthly mean, 73°.6 at Philadelphia.

Lowest monthly mean, 60°.1 at Wellsboro'.

Highest temperature recorded during the month, 98° on the 3d at New Castle, and on the 6th at Gettysburg.

Lowest temperature, 34° on the 24th at Somerset.

Greatest local monthly range, 29°.5 at Huntingdon.

Least local monthly range, 13°.0 at Erie.

Greatest daily range, 47° at New Castle on the 16th.

Least daily range, 2°.0 at Grampian Hills on the 21st.

From January 1, 1890, to August 31, 1890, the excess in temperature at Philadelphia was 670°, at Erie 276° and at Pittsburgh 659°.

The warmest period of the month was from the 1st to the 4th, inclusive, and on the 17th, 18th and 19th. The coldest was on the 24th and 31st.

Light frosts were reported in several of the elevated districts on the 24th.

BAROMETER.

The mean pressure for the month, 30.03, is about .05 above the normal. At the U. S. Signal Service Stations, the highest observed was 30.28 at Pittsburgh on the 24th and the lowest 29.680 at Philadelphia on the 27th.

PRECIPITATION.

The average rainfall 5.76 inches for the month, is an excess of over 1.50 inches. The distribution was unevenly divided.

The largest monthly totals in inches were Carlisle, 9.65; Ligonier, 9.37; Gettysburg, 8.95; Mauch Chunk, 8.59; Uniontown, 8.44.

The smallest were Charlesville, 2.58; Philadelphia, 3.36; New Castle, 3.69; Pottstown, 3.80; Lock Haven, 3.83; Hollidaysburg, 3.87, and Meadville, 3.94.

Rains were of almost daily occurrence in some parts of the state. The heaviest occurred on the 8th, 18th, 19th, 20th, 21st, 22d, 26th and 27th.

On the 8th, Gettysburg, reports a fall of 4.08 inches and Carlisle, 3.04 inches.

WIND AND WEATHER.

The prevailing wind was from the west.

Local storms of great severity were numerous and destructive to life and property. The most notable occurred on the 19th, when, at about 5.12 P. M., a terrific tornado from the southwest passed over Wilkes-Barre. Sixteen persons were killed, and the damage to property is estimated at one million of dollars.

Average number: Rainy days, 12; clear days, 9; fair days, 14; cloudy days, 8.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for August, 1890.*

County.	Station.	Elevation above sea level (feet).	Barometer Reduced to Sea Level.			Temperature.											
							Maximum.		Minimum.				Daily Range.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum	Mean.	Greatest.	Date.	Least.	Date.
Adams.*	Gettysburg.	624	. . .	. . .	. . .	70.3	98.0	6	40.0	24	82.4	58.	24	33.0	24	7.0	18
Allegheny.*	Pittsburgh.	847	30.050	30.280	29.700	71.1	94.0	2	45.0	24	80.0	62.	17.8	31.0	16	7.0	14
Bedford.	Charlesville (30 days).	1,300	. . .	. . .	. . .	67.4	89.0	1	37.0	24	78.0	55.	22.	34.0	13	3.0	14
Blair.+	Altoona.	1,181	. . .	. . .	. . .	72.0	94.0	4	51.0	31	81.4	62.	12.	26.0	16	9.0	18
Bradford.	Wysox.	718	30.048	30.272	29.725	66.3	91.0	4	42.0	24	77.9	56.	21.	33.5	16	10.0	23
Bucks.	Quakertown.	536	30.030	30.240	29.640	68.5	90.0	1	43.0	24	79.9	58.	21.	32.5	25	12.2	2
Cambria.*	Johnstown.	1,184	30.071	30.284	29.775	68.8	94.0	3	44.0	24	78.5	59.	19.	31.0	12	11.0	18
Cameron.	Emporium.	1,030	. . .	. . .	. . .	68.8	92.0	2	35.0	31	79.1	53.	25.	40.0	16	12.0	1
Carbon.*	Mauch Chunk.	550	. . .	. . .	. . .	68.4	91.0	9	46.0	24, 25	79.5	57.	22.	33.0	9	10.0	3
Centre.	State College Agricultural Experiment Station.	1,191	29.997	30.234	29.710	66.6	90.0	2	44.0	24	76.9	57.	19.	29.0	13	9.0	8
Chester	West Chester.	455	30.025	30.215	29.655	70.0	91.0	1	46.0	24	78.9	63.	15.	23.0	24	5.0	8
Clarion.	Clarion— State Normal School.	1,530	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .		. . .		. . .	. . .
Clearfield.	Grampian Hills.	1,450	. . .	. . .	. . .	66.1	94.0	4	46.0	24	77.5	59.	18.	30.0	29	2.0	21
Clinton.	Lock Haven (30 days).	560	. . .	. . .	. . .	70.9	94.0	4	41.0	24	82.5	58.	23.	41.0	12	10.0	5
Columbia.	Catawissa.	491	. . .	. . .	. . .	69.8	90.0	4, 17	48.0	24	78.8	60.	18.	27.0	16	9.0	22
Crawford.	Meadville.	1,300	29.958	30.160	29.560	63.9	91.0	3	. . .	. . .	74.5	53.	21.	. . .		. . .	. . .
Cumberland.	Carlisle.	480	. . .	. . .	. . .	69.5	92.0	1, 18	44.0	24	82.7	61.	21.	32.0	12	6.5	18
Dauphin.*	Harrisburg.	361	30.046	30.270	29.756	70.4	88.0	1	50.0	24	79.3	63.	16.	24.0	1	8.0	18
Delaware.	Swarthmore— Swarthmore College (27 days).	190	30.026	30.232	29.743	72.2	92.0	1	50.0	31	81.3	64.6	16.	26.4		6.	
Erie.*	Erie.	681	30.030	30.240	29.730	67.0	89.0	3	47.0	24	73.0	60.0	13.0	23.0	16	4.	30
Fayette.	Uniontown.	1,000	30.028	30.184	29.735	71.6	95.0	3	43.0	24, 31	80.4	61.6	18.8	36.0	31	8.	14
Franklin.*	Chambersburg— Wilson Female College.	618	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .		. . .		. . .	
Fulton.	McConnellsburg.	875	. . .	. . .	. . .	66.9	92.0	17	40.0	24	81.4	59.0	22.4	33.0	24	18.0	18
Greene.	Waynesburg.	750	. . .	. . .	. . .	67.1	94.0	3	40.0	31	78.7	55.5	23.2	. . .			
Huntingdon.*	Huntingdon— The Normal College.	650	. . .	. . .	. . .	68.6	98.0	1	40.0	31	83.4	53.9	29.5	39.0	30	10.0	26
Indiana.	Indiana— State Normal School.	1,350	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .		. . .	. . .	. . .	
Lackawanna.*	Scranton.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .		. . .	. . .	. . .	
Lancaster.	Lancaster.	411	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .		. . .	. . .	. . .	
Lawrence.	New Castle.	932	. . .	. . .	. . .	69.6	98.0	3	36.0	31	80.8	54.0	26.	47.0	16	10.0	30

Lebanon.	Annville—																
	Lebanon Valley College.	339	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lehigh.	Coopersburg.	530	. . .	. . .	. . .	66.8	91.0	4	50.0	26	78.9	62.0	16.9	26.0	14	9.0	3
Luzerne.	Drifton—																
	Drifton Hospital.	1,655	. . .	. . .	. . .	64.8	88.0	2, 4	42.0	24	75.5	57	18.	26.0	11	10.0	8
Lycoming.*	Nisbet.	550	. . .	. . .	. . .	67.7	. . .	. . .	. . .	. . .					. . .	. . .	. . .
Mercer.*	Greenville—																
	Thiel College.	1,000	29.964	30.200	29.686	66.0	96.0	4	37.0	31	78.	53.9	24.2	43.	16	13.3	26
Mifflin.	Lewistown.	500	. . .	. . .	. . .	72.2	96.0	4	43.0	23	79.8	58.1	21.7	34.	12	12.0	10
Montgomery.	Pottstown.	150	. . .	. . .	. . .	70.9	94.0	1	50.0	23, 25	82.6	63.4	19.2	32.	25	8.0	8
Northampton.	Bethlehem.	360	. . .	. . .	. . .	72.1	89.0	4	49.0	23	80.	62.3	17.8	26.	22	10.0	28
Philadelphia.*	Philadelphia																
	Signal Office.	117	30.040	30.260	29.680	73.6	94.0	1	51.0	24	81.3	66.0	15.3	22.0	17	5.0	23
Schuylkill.	Girardville.	1,000	30.007	30.182	29.750	67.0	85.0	4, 17	45.0	24	76.0	58.0	18.0	25.0	15	8.0	26
Snyder.	Selinsgrove.	445	. . .	. . .	. . .	70.0	94.0	4	. . .	. . .	83.	56.3	27.4	. . .		. . .	. . .
Somerset.	Somerset.	2,250	. . .	. . .	. . .	65.4	93.0	3	34.0	24	77.9	53.6	24.3	38.0		10.0	18
Sullivan.	Eagles Mere.	2,060	30.070	32.290	29.829	64.0	82.0	4	41.0	24	70.7	57.0	13.7	25.0		4.0	19
Tioga.	Wellsboro'.	1,327	30.064	30.234	29.710	60.1	88.0	4	40.0	12	71.5	52.4	19.1	30.0		16.0	3
Union.*	Lewisburg.	450	. . .	. . .	. . .	70.8	93.0	4	42.0	24	82.	59.5	22.6	34.0	13	12.0	30
Warren.	Columbus.	1,410	. . .	. . .	. . .	64.6	95.0	3	40.0	24	76.0	53.2	22.8	40.0	16	7.0	5
Washington.	Canonsburg.	950	30.040	30.288	29.136	67.8	. . .	. . .	39.0	24	78.5	50.1	22.4	. . .		. . .	. . .
Wayne.	Honesdale.	1,000	. . .	. . .	. . .	65.9	87.0	4	41.0	24	74.8	57.0	17.8	30.0	16	4.0	23
Westmoreland.	Ligonier	1,750	. . .	. . .	. . .	68.7	96.0	3	38.0	24	80.5	54.3	26.2	38.0	12	13.0	10
Wyoming.*	South Eaton.	600	. . .	. . .	. . .	67.4	88.0	4	47.0	24	75.9	58.9	17.0	25.0	16	7.0	23
York.*	York.	385	29.968	30.171	29.797	71.5	93.0	1, 17	42.0	24	82.6	60.5	22.1	30.0	29	4.5	8

*Observations taken at 8 A. M. and 8 P. M.   †Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

County.	Station.	Relative humidity.	Dew point.	Precipitation.		Number of Days.			Wind. Prevailing direction.			Observers.
				Total inches.	Number of days rain-fall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Adams,*	Gettysburg,			8.95	13	7	13	11	SW	SW	SW	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	68.2	58.0	4.06	12	6	15	10	N	N	N	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville (30 days),	78.8	55.7	2.58	8	8	18	4	N	N	N	Miss E. A. G. Apple.
Blair,†	Altoona,	56.4	55.5	4.09	10							Dr. Charles B. Dudley.
Bradford,	Wysox,	81.8	61.0	5.71	13	4	10	17	SE	SE	SE	Charles Beecher.
Bucks,	Quakertown,	82.0	62.8	5.86	14	16	14	11	NW	NW	NW	J. L. Heacock.
Cambria,*	Johnstown,	86.2	61.5	6.38	13	5	15	11	E		S	E. C. Lorentz.
Cameron,	Emporium,			7.76	13	4	14	9	W	NW	NW	T. B. Lloyd.
Carbon,*	Mauch Chunk,			8.59	11	9	14	8	NW	NW	NW	John J. Boyd.
Centre,	State College—											
	Agricultural Experiment Station,	74.8	57.4	5.46	11	8	17	6	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	77.5	62.0	5.87	17	13	12	6	W	NW	S	Jesse C. Green, D. D. S.
Clarion,	Clarion-											
	State Normal School,											C. M. Thomas, B. S.
Clearfield,	Grampian Hills,			6.41	12	3	21	7	W	W	NW	Nathan Moore.
Clinton,	Lock Haven (30 days),			3.83	9	17	8	5	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,			5.44	15							Robert M. Graham.
Crawford,	Meadville,	77.8	56.8	3.94	7	7	17	7	S	W	W	J. & B. H. Metcalf.
Cumberland,	Carlisle,	89.0	66.0	9.65	14	7	18	6	W	W	W	J. E. Pague.
Dauphin,*	Harrisburg,	72.6	60.6	5.70	15	10	13	8	W	W	W	Frank Ridgway, Sgt. Sig. Corps
Delaware,	Swarthmore—											
	Swarthmore College (27 days),	82.3	66.9	4.38	10	1	15	15				Prof. Susan J. Cunningham.
Erie,*	Erie,	73.0	58.0	4.64	12	7	12	12	N	NW	NW	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,			8.44	9	12	17	2	W	W	W	Wm. Hunt.
Franklin,*	Chambersburg—											
	Wilson Female College,											Miss Mary A. Ricker.
Fulton,	McConnellsburg,	77.3	62.3	6.60	11	11	15	5	N	W	NW	Thomas F. Sloan.
Greene,	Waynesburg,			5.45	9							Capt. W. C. Kimber.
Huntingdon,*	Huntingdon—											
	The Normal College,			4.40	9	24	3	4	W	W	W	Prof W J. Swigart.
Indiana,	Indiana—											
	State Normal School,											Prof. S. C. Schmucker
Lackawanna,*	Scranton,											C. A. Hinsdell.
Lancaster,	Lancaster,											C. N. Heller,
Lawrence,	New Castle,			3.69	7	11	13	7	W	S	SW	Wm. T. Butz.

Lebanon.	Annville— Lebanon Valley College,			....	....	....	....	....	....	....	....	Geo. W. Bowman, A. M., Ph. D.
Lehigh.	Coopersburg.	....	....	6.72	14	6	14	11	SE	SE	NE	M. H. Boye.
Luzerne.	Drifton— Drifton Hospital,	....	....	5.30	12	7	15	7	....	....	....	H. D. Miller, M. D.
Lycoming,*	Nisbet,	....	....	4.30	9	....	....	....	....	....	....	John S. Gibson, P. M.
Mercer,*	Greenville— Thiel College,	87.4	53.4	4.28	13	6	16	9	S	....	N	Prof. S. H. Miller.
Mifflin,	Lewistown,	85.3	68.1	5.27	15	6	18	7	NW	NW	NW	Culbertson & Lantz.
Montgomery.	Pottstown.	82.0	65.0	3.80	18	13	14	4	W	W	W	Charles Moore, D. D. S.
Northampton.	Bethlehem.	82.0	66.0	5.31	7	18	7	6	W	W	W	Lerch & Rice.
Philadelphia,*	Philadelphia— Signal Office,	76.0	63.0	3.36	12	4	14	13	NW	NW	NW	Luther M. Dey, Sgt. Sig. Corps.
Schuylkill.	Girardville.	....	....	6.48	14	17	7	7	NW	NW	NW	E. C. Wagner.
Snyder,	Selinsgrove,	80.3	63.6	5.81	13	3	16	12	NW	NW	NW	J. M. Boyer.
Somerset,	Somerset,	86.2	60.1	7.90	12	4	18	9	NW	NW	NW	W. M. Schrock,
Sullivan,	Eagles Mere,	79.8	58.4	7.28	13	4	18	9	NW	NW	NW	E. S. Chase.
Tioga,	Wellsboro',	68.5	56.8	6.89	15	6	10	15	N	N	NW	H. D. Deming.
Union,*	Lewisburg,	....	....	5.78	13	5	22	4	SW	SW	SW	F. O. Whitman.
Warren,	Columbus,	68.0	53.0	6.20	16	8	13	10	SW	SW	SW	Wm. Loveland.
Washington,	Canonsburg,	79.0	60.5	6.89	14	7	19	5	SE	SE	SE	A. L. Runion, M. D.
Wayne,	Honesdale,	64.8	57.3	5.97	15	....	....	....	....	....	....	John Torrey.
Westmoreland,	Ligonier,	76.0	62.0	9.37	10	14	15	2	....	....	....	J. T. Ambrose.
Wyoming,*	South Eaton,	....	....	7.58	17	4	21	6	NW	NW	NW	Benj. M. Hall.
York,*	York,	79.4	63.7	5.65	15	17	8	6	NW	NW	NW	Mrs. L. H. Greenewald.

* Observations taken at 8 A. M., and 8 P. M. † Observations taken at 12 noon.

PRECIPITATION FOR AUGUST, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	Wellsboro'.	Harrisburg.	Selinsgrove.
1.	.02		.45	.65		.12			.25	.41	.30	.03		.13		.30					.10	.17	.60	.02	
2.																		.03							
3.						.10																	.34		
4.	1.16		.13	.75																					.16
5.	1.56	.40	.30	1.10	.96	.12			1.02	1.60	2.50	1.70	.80	.01	1.05	.67	.68			1.26		.45	.20		
6.				.01										.25				.67			.38			.04	
7.																									
8.					.29	2.22			1.37	1.15	.14	.20	1.60	.07	.52	.40	1.06	.62			.48		.04	1.96	.33
9.		.20	.05	.32	.01						.07	.10								.15	.10	.15	.10	.34	.05
10.			03	.20	.48				.05					.03									.02		
11.				.10																.41			.10		
12.																					.05				
13.																									
14.									.05						.04						.08			.14	.01
15.																		.02							
16.																									
17.	.25	.50	.45	.15	.23						.30	.80			.03	.20							.14	.10	.51
18.					.21	.46			.10	.25	.17		.40	.40	.05		.08			.06	.14	.33		.46	.14
19.	.10	.52	.30	.68	.55				.40	.15	.36	1.18	.20	.10	.07	.40	.05			.39	.40		1.22	.04	1.00
20.	.02				.35	.64			.25	.36		.38	.70	.14	.02		.43	.65		.23	.15	.83	.05	.94	.42
21.	.43	1.18	.92	.68	.32	1.00			.87	.50	.62	1.21	.30	.04	.68	.70	.39	.10		67	2.00	.98	1.00	.46	.81
22.	.53	.25	.28	.55		.74				.25	.20	.48	.50	.65	.47	.13	.05	.37		.37	.30		.54	.14	.15
23.			.02	.10					.28	.10		.50						.15				.10	1.58	06	.07
24.																									
25.																					.02				
26.	.13	.04	.56	.10	.47	3.04			1.06	1.88	1.02	.10	.90	.85	.21	.25	.97	.12		1.55	.16	.25	.12	.36	1.80
27.	.18		.65	.66	.07				.38	70	.37	.61	.40	1.52	1.11	1.00	.16	1.36		.21	.40		.74	.54	
28.																									
29.	.25		.03	.05	.12				.30	.55	.28	.47	.10		.33	.35				.16		.57	.10	.10	.36
30.	.01			.10									.10	.14							.29	*			
31.																									
	4.64	3.69	4.28	6.20	4.06	8.44	...	...	6.38	7.90	6.41	7.76	6.00	4.33	4.58	4.40	3.87	4.09	...	5.46	5.65	3.83	6.89	5.70	5.81

* No record.

PRECIPITATION FOR AUGUST, 1890.—*Continued.*

	Lancaster.	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Pottstown.	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.
1.		.23	.08		.26	.51		.04	.09		.07	.85	.48	2.26	.70	.37	.05	1.04	.33	.38	.08		.02	.11	.21
2.		.08		.02	.02				.04							.23									
3.				.01						.10							*								
4.																									
5.		.15	.47		.05	.56	.65		.16	1.43	.20	.58	.01	.75		.17	.42	.14	.02		1.00	.87	.60	.10	.34
6.				.26				1.22	.06		.65	.05		.77	.18		.74	.25	.07	.21			.15		
7.																									
8.				1.69		.05	.21				.32	.96	.89	.77			.17	.41	.24	.89	.31	.02	.10	.28	.12
9.		.78	1.11	.02	.69	.06		.10	.22			.05	.05	.10	.06	.68	.06	.22	.13		.03		.20		.26
10.			.04		.05			.57	2.33		.33	.01	.31	.02	1.37	.30	.09			.20	.07	.12			
11.		.05	.52		.01		.06	.03	.04	.30					.01	.04				.04				.08	
12.												.05	.01	.02						.02			.08		
13.							.02					.16	.09	.06			.03		.02	.04	.50	.01		.16	
14.				.02					.08		.18	.05	.03			.14	.10			.40	1.08	.03			.20
15.														.12											
16.																									
17.		.22	.63	.04	.06	.30	.30	.02	.20	.40	.20				.06	.33						.67			
18.				.27		.17	.22	.70		.05	.35	.76	.62	.66	.09	.04	.78	.78	.36	.75	.58		.75	.56	.35
19.		.04	1.02	.44	2.42	.84	1.35	.03	.53	.40	.30	.23	.11		1.43	85	.86	.08	19	.55	.05		.10	.29	.81
20.		42		.53			.28	1.02	.37	.12	.35	.23	.16	.62			.52		42	.06	.95		1.15	.71	1.21
21.		43	1.38	.25	.32	.40	1.07		.67	.81	.40	.80	1.22	.35	20	.27	.55	.08	1.	.23	.67	1.41	.47		.42
22.		27	.04	.04	.70	.30	.51	.30	.95	.22		.27		.12	50	.55					.09	.48	.44	.88	
23.		58	.18		.89	.57	.06	.42	.54			.02			.38	.66									
24.								.15																	
25.																									
26.			.52	.48	.87	.50	.45		.18	.47	.80			.03	.44	79						1.11			
27.		.03	.97	.85		1.05	1.25	.84	.79	.90		.52	.50	.54	.64		1.29	24	.23	1.23	1.21		.93	1.85	.68
28.																									
29.		.43	.32		.16	.13	.05		.28	.10	.35				.29	55				.37					
30.				.20								.28	.25	.21			.20	.14	.03		.42	.65	.76	.39	
31.																									
		5.71	7.28	5.12	5.71	5.44	6.48	5.44	7.53	5.30	3.80	5.87	4.77	7.40	6.35	5.97	5.86	4.38	3.36	6.37	7.04	5.37	5.75	5.41	4.57

* No record.

PRECIPITATION FOR AUGUST, 1890—*Continued.*

	Forks of Neshaminy.	Germantown.	Point Pleasant.	Bethlehem.	Chambersburg.	Carlisle.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	[illegible]	Charleston.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	.24	.30	.07			.86	[illegible]		.05		.30				.07	.01				[illegible]		.10	[illegible]		
2						.05			.01			*													
3																									
4																									
5	.54	.20		.37	1.08		.42	.50	.17	.02	.10					.40		[illegible]		[illegible]		[illegible]	[illegible]		[illegible]
6						1.47	.06			1.05					[illegible]										
7			.46					1.25																	
8	.53	.38			.35	3.01	.86		.06	.20	.20	.16			[illegible]	[illegible]		[illegible]		[illegible]			1.00		[illegible]
9			.30		.03	.35			.30											[illegible]					
10		.05		.35	.08					.20										[illegible]					[illegible]
11			.05							.02					.01										[illegible]
12		.47	.01																						[illegible]
13	.14	.05		.06																[illegible]					
14															.24	.64				[illegible]					[illegible]
15						.03										.01									
16																									
17		.38			.46			.20	.07		[illegible]	.21				.19		[illegible]				[illegible]			
18	.76	.45	.87		.48	.33	.26	.15		.04					.26	.03				.14			[illegible]		[illegible]
19	.03	.17	.16	1.20	1.10	.03	.57	.30	1.30		[illegible]				[illegible]	.06		.10		[illegible]		1.00	[illegible]		[illegible]
20	.61	.80	1.15		.13	.82		.40	.27	1.56		.24			.22	.25		[illegible]		1.07			1.19		[illegible]
21	1.43	.54		.27	.74		1.66	1.10	.40	.17	[illegible]	.53			.80	.77		[illegible]		[illegible]		[illegible]	[illegible]		[illegible]
22	.09	.20	.98		.41	1.23	.12	.40	.04			.11			.09	.24		[illegible]		[illegible]		[illegible]	[illegible]		[illegible]
23						.35				.03	.20					.01		.01							
24																									
25															.21			[illegible]							
26					1.47	.15	.81	1.30	.02		1.30	1.08			.44	.32							1.80		
27	.76	.32	1.15	1.79	.15	.97	.74		.97	4.22		.11				1.00				1.12		.84			.70
28																		1.00							
29				1.19	.44		.24		.15	.11	.30	.14				.42							.90		
30	.77		.81			.07									.27					.46					.27
31																									
	5.90	4.81	6.01	5.31	6.89	9.65	6.60	5.45	5.78	8.60	4.30	2.58	6.50	...	8.95	5.27	...	4.86	...	6.72	...	3.94	9.37	...	4.94

* No record.

FOR SEPTEMBER, 1890.

TEMPERATURE.

The temperature of 57 stations for September, 1890, was 62°.0, which is about 1°.0 above the normal, and 0°.1 above the corresponding month of 1889.

The mean of the daily maximum and minimum temperatures 72°.4 and 52°.1 give an average daily range of 20°.3, and a monthly mean of 62°.2.

Highest monthly mean, 67°.2 at Philadelphia.

Lowest monthly mean, 56°.4 at Wellsboro', Dyberry and Waynesburg.

Highest temperature recorded during the month, 91° on the 5th at Coatesville and Carlisle, and on the 7th at McConnellsburg.

Lowest temperature, 25° on the 25th at Dyberry.

Greatest local monthly range, 26°.4 at Phillipsburg.

Least local monthly range, 14°.0 at Erie.

Greatest daily range, 49°.0 at Huntingdon on the 20th.

Least daily range, 1°.0 at Drifton on the 11th, Selinsgrove 14th, and Columbus 27th.

From January 1, 1890, to September 30, 1890, the excess in temperature at Philadelphia was 681°, at Erie 183° and at Pittsburgh 652°.

The warmest period of the month was from the 2d to the 8th, inclusive. The coldest was from the 25th to the end of the month.

Frosts were quite general on the 25th, 28th, 29th and 30th.

BAROMETER.

The mean pressure for the month, 30.135, is about .05 above the normal. At U. S. Signal Service Stations, the highest observed was 30.39 at Pittsburgh and Erie on the 28th, and the lowest 29.80 at Erie on the 13th.

PRECIPITATION.

The average rainfall 4.57 inches for the month, is an excess of one inch.

The largest monthly totals in inches were Ligonier, 8.54; Indiana, 8.10; Somerset, 7.84; Emporium, 7.91; New Castle, 7.48 and Columbus, 7.10.

The least were South Eaton, 2.05; State College, 2.29; Philadelphia, 2.31; Petersburg, 2.35; Wilkes-Barre, 2.42; Swarthmore, 2.62; McConnellsburg, 2.62 and Harrisburg, 2.89.

General rains occurred from the 11th to the 15th inclusive, and on the 26th and 27th. Excessive rains were reported from Wellsboro' on the 9th and 10th; Myerstown and Meadville on the 11th and 12th, and at York on the 12th and 13th.

NOTE.—An actual fall of 2.50 inches in any period of 24 hours, or one inch in one hour, is excessive precipitation.

WIND AND WEATHER.

The prevailing wind was from the northwest. The weather was generally favorable for the harvesting and curing of late crops, and for fall seeding.

Average Number.—Rainy days, 11; clear days, 10; fair days, 9; cloudy days, 11.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for September, 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Least.	Date.
Adams,*	Gettysburg.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Allegheny,*	Pittsburgh.	847	30.130	30.390	29.880	64.6	89.0	8	40.0	28	73.5	55.7	17.8	31.0	2	5.0	9
Bedford.	Charlesville.	1,300	. . .	. . .	. . .	60.6	84.0	3, 7	29.0	29	72.6	50.4	22.2	39.0	1	6.0	11
Blair.†	Altoona.	1.181	. . .	. . .	. . .	64.0	84.0	5	35.0	29	72.4	55.6	16.8	27.0	14	8.0	12
Bradford.	Le Roy.	1.400	. . .	. . .	. . .	61.1	84.0	4	32.0	25	68.5	53.2	15.3	28.0	25	4.0	9
Bucks.	Quakertown.	536	30.130	30.380	29.870	62.0	87.0	5	33.0	25	74.1	51.9	22.2	35.7	30	7.1	11
Cambria,*	Johnstown.	1,184	30.163	30.419	29.910	63.5	84.	7, 8	36.0	28, 29	74.3	52.7	21.6	33.0	14	9.0	11
Cameron.	Emporium.	1,030	. . .	. . .	. . .	62.0	84.0	7	32.0	26, 29	72.5	49.3	23.2	40.0	30	8.0	10
Carbon.*	Mauch Chunk (29 days).	550	. . .	. . .	. . .	62.4	87.0	5	31.0	28	73.3	51.6	21.7	38.5	30	4.0	11
Centre.	State College—																
	Agricultural Experiment Station.	1.191	30.097	30.384	29.797	60.6	86.0	7	32.0	25	70.7	50.9	19.8	33.0	2	7.0	8
Chester.	West Chester.	455	30.118	30.366	29.885	64.3	87.0	5	41.0	25, 29	73.7	56.6	17.1	26.0	10	4.0	11
Clarion.	Clarion—																
	State Normal School.	1.580	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Clearfield.	Grampian Hills.	1.450	. . .	. . .	. . .	59.6	84.0	2, 5, 7	34.0	1, 28, 29	70.6	51.1	19.5	44.0	2	2.0	10
Clinton.	Lock Haven.	560	. . .	. . .	. . .	62.1	90.0	7	33.0	28	72.8	54.8	18.0	38.0	2	6.0	11
Columbia.	Catawissa.	491	. . .	. . .	. . .	62.0	85.0	5	36.0	25, 29	70.5	54.0	16.5	29.0	3	5.5	14
Crawford.	Meadville.	1,100	30.055	30.370	29.730	57.9	84.0	7, 8	35.0	29	68.5	47.8	21.2	. . .	. . .	. . .	. . .
Cumberland.	Carlisle (29 days).	480	. . .	. . .	. . .	65.4	91.0	5	32.0	29	77.4	53.0	23.5	37.0	1	2.0	14
Dauphin.*	Harrisburg.	361	30.150	30.388	29.889	63.6	86.0	7	42.0	29	72.8	55.7	17.1	30.0	19	4.0	11
Delaware.	Swarthmore—																
	Swarthmore College.	190	30.122	30.294	29.880	64.3	86.0	5	43.0	26	74.0	56.5	17.5	27.7	10	5.7	11
Erie.*	Erie.	681	30.110	30.390	29.800	61.0	87.0	7	39.0	29	68.0	54.0	14.0	23.0	3	5.0	27
Fayette.	Uniontown.	1,000	30.076	30.261	29.784	66.7	87.0	8	41.0	28, 29	75.4	56.6	18.8	34.0	2	6.0	27
Franklin.*	Chambersburg—																
	Wilson Female College.	618	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Fulton.	McConnellsburg.	875	. . .	. . .	. . .	63.1	91.0	7	35.0	29	75.6	52.9	22.7	37.0	1	8.0	15
Greene.	Waynesburg.	750	. . .	. . .	. . .	56.4	84.0	8	31.0	28	65.7	48.3	17.4	34.0	1	7.0	9
Huntingdon.*	Huntingdon—																
	The Normal College.	650	. . .	. . .	. . .	62.4	88.0	5	31.0	29	76.9	48.0	28.9	49.0	20	19.0	9
Indiana.	Indiana—																
	State Normal School.	1,350	30.197	30.415	29.996	61.2	84.0	7, 8	32.0	28	72.3	48.7	23.6	34.0	2	9.0	20
Lancaster.	Lancaster (17 days).	413	30.144	30.320	29.972	59.1	79.0	14, 19	30.0	24	64.0	41.4	22.6	34.5	19	17.5	26
Lawrence.	New Castle.	932	. . .	. . .	. . .	62.9	90.0	8	28.0	28	73.4	48.5	24.9	44.0	2	7.0	20

Lebanon.	Annville— Lebanon Valley College.	339	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .							
Lehigh.	Coopersburg.	530	. . . .	. . . .	. . . .	63.9	87.0	5	38.0	25,30	73.3	55.0	18.3	30.0	30	4.0	11
Luzerne.	Drifton. Drifton Hospital—	1,655	. . . .	. . . .	. . . .	58.7	81.0	5	35.0	29	68.9	51.	17	20.0	2	.0	
Lycoming.*	Nisbet.	550	. . . .	. . . .	. . . .	60.0	. . . .	. . . .	. . . .	. . . .							
Mercer.*	Greenville— Thiel College.	1,000	30.089	30.325	29.762	60.9	87.0	7	35.0	29	72.	49.	22.3	40.2	2	3.8	10
Mifflin.	Lewistown.	500	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Montgomery.	Pottstown.	150	. . . .	. . . .	. . . .	66.0	89.0	5	39.0	25	76.0	57.0	19.0	31.0	2	2.0	11
Northampton	Bethlehem.	360	. . . .	. . . .	. . . .	65.0	86.0	5	34.0	25	73.6	54.5	19.1	34.0	30	8.0	13
Philadelphia.*	Philadelphia— Signal Office.	117	30.151	30.380	24.880	67.2	88.0	5	45.0	25	74.8	59.6	15.2	25.0	25	4.0	11
Schuylkill.	Girardville.	1,000	30.102	30.308	29.910	61.4	84.0	5	36.0	25,26	70.8	51.4	19.4	29.0	30	7.0	11
Snyder.	Selinsgrove.	445	. . . .	. . . .	. . . .	62.2	87.0	7	37.0	29	71.6	54.2	17.4	30.0	3	1.0	14
Somerset.	Somerset.	2,250	. . . .	. . . .	. . . .	59.6	83.0	4	32.0	28	72.4	49.5	22.9	40.0		7.0	30
Sullivan.	Eagles Mere.	2,060	30.156	30.396	20.908	59.6	79.0	3	34.0	28	64.6	50.9	13.7	24.0		3.0	13
Tioga.	Wellsboro'.	1,327	30.108	30.431	29.820	56.4	88.0	7	30.0	29,30	64.5	48.6	15.9	38.0		6.0	20
Union.*	Lewisburg.	450	. . . .	. . . .	. . . .	63.2	88.0	5	34.0	25	74.3	52.2	22.	32.0	25	10.0	11
Warren.	Columbus.	1,410	. . . .	. . . .	. . . .	59.8	90.0	7	30.0	29,30	71.4	48.3	23.1	46.0	30	1.0	27
Washington.	Canonsburg.	950	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Wayne.	Honesdale.	1,000	. . . .	. . . .	. . . .	59.8	82.0	5	32.0	25,29	68.4	51.1	17.3	34.0	30	3.0	10
Westmoreland.	Greensburg.	1,175	. . . .	. . . .	. . . .	64.0	87.0	8	30.0	28,29	74.7	49.4	25.3	43.0	2	9.0	20
Wyoming.*	South Eaton.	660	. . . .	. . . .	. . . .	57.5	82.0	4, 5	35.0	25,29	69.7	51.6	18.1	29.0	30	4.0	11
York.*	York.	385	30.100	30.324	29.925	67.3	88.0	5, 7	34.0	25	75.2	59.4	15.8	38.0	5	10.5	11

*Observations taken at 8 A. M. and 8 P. M.

†Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION. Total inches.	PRECIPITATION. Number of days rainfall.	NUMBER OF DAYS. Clear.	NUMBER OF DAYS. Fair.	NUMBER OF DAYS. Cloudy.	WIND. PREVAILING DIRECTION. 7 A. M.	WIND. PREVAILING DIRECTION. 2 P. M.	WIND. PREVAILING DIRECTION. 9 P. M.	OBSERVERS.
Adams,*	Gettysburg,	...	...	...	...	...	...	...	...	...	...	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	75.0	55.0	4.24	14	7	14	9	S	S	S	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	84.0	53.6	4.05	11	10	11	9	N	SW	N	Miss E. A. G. Apple.
Blair,†	Altoona,	69.8	54.0	3.98	14	...	...	...	...	...	...	Dr. Charles B. Dudley.
Bradford,	Le Roy,	...	...	5.45	11	11	7	12	SW	SW	SW	Geo. W. T. Warburton.
Bucks,	Quakertown,	83.8	57.1	4.82	10	11	10	9	SW	SW	SW	J. L. Heacock.
Cambria,*	Johnstown,	88.3	56.3	5.85	14	9	10	11	S	S	S	E. C. Lorentz.
Cameron,	Emporium,	...	...	7.91	12	12	7	11	NW	NW	NW	T. B. Lloyd.
Carbon,*	Mauch Chunk (29 days),	...	...	4.64	11	11	10	9	NW	NW	NW	John J. Boyd.
Centre,	State College— Agricultural Experiment Station,	79.7	53.8	2.29	13	8	12	10	N	SW	SW	Prof. Wm. Frear.
Chester,	West Chester,	78.0	56.5	4.07	12	13	8	9	NW	S	S	Jesse C. Green, D.D.S.
Clarion,	Clarion— State Normal School,	...	...	...	...	...	...	...	...	...	...	C. M. Thomas, B. S.
Clearfield,	Grampian Hills,	...	...	5.87	13	4	16	10	E	SW	E	Nathan Moore.
Clinton,	Lock Haven,	...	...	3.87	15	11	10	9	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,	...	...	2.81	9	...	...	...	...	...	...	Robert M. Graham.
Crawford,	Meadville,	82.4	51.3	5.82	10	11	9	10	S	S	S	J. & B. H. Metcalf.
Cumberland,	Carlisle (29 days),	88.5	61.0	4.12	11	10	12	7	S	S	W	J. E. Pague.
Dauphin,*	Harrisburg,	77.8	56.0	2.89	11	10	9	10	E	E	E	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore— Swarthmore College,	85.0	60.0	2.62	9	1	11	18	S	SW	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	79.0	58.0	5.16	13	8	11	11	S	S	S	Peter Woods, Sgt. Sig. Corps.
Fayette,	Uniontown,	...	...	6.73	10	16	11	3	SW	SW	SW	Wm. Hunt.
Franklin,*	Chambersburg— Wilson Female College,	...	...	...	...	...	...	...	...	...	...	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	80.0	56.2	2.62	7	9	13	8	...	...	...	Thomas F. Sloan.
Greene,	Waynesburg,	...	...	5.90	9	9	10	11	...	...	...	Capt. W. C. Kimber.
Huntingdon,	Huntingdon— The Normal College,	...	...	3.55	5	19	4	7	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana— State Normal School	84.4	56.7	8.10	13	8	12	10	N	NW	NW	Prof. S. C. Schmucker
Lancaster,	Lancaster (17 days),	87.9	51.8	1.24	4	4	9	9	NW	NW	NW	C. N. Heller.
Lawrence,	New Castle,	...	...	7.48	12	11	10	9	S	S	E	Wm. T. Butz.

Lebanon.	Annville—Lebanon Valley College	...	...	...	...	...	...	...	...	...	...	Geo. W. Bowman. A.M., Ph.D.
Lehigh.	Coopersburg.	...	...	4.18	9	10	7	13	NE	SE	NE	M. H. Boye.
Luzerne.	Drifton—Drifton Hospital.	...	...	3.55	7	...	...	...	...	...	...	H. D. Miller, M.D.
Lycoming.*	Nisbet.	...	...	3.90	7	...	...	...	...	...	...	John S. Gibson, P.M.
Mercer,*	Greenville—Thiel College.	93.9	54.6	6.19	13	7	10	13	S	S	S	Prof. S. H. Miller.
Mifflin.	Lewistown.	...	...	...	...	...	...	...	...	...	...	Culbertson & Lantz.
Montgomery.	Pottstown.	84.0	60.0	4.01	8	14	9	7	NW	SW	SW	Charles Moore. D.D.S.
Northampton.	Bethlehem.	83.0	59.0	3.51	7	15	5	10	W	W	W	Lerch & Rice.
Philadelphia,*	Philadelphia—Signal Office.	78.0	58.0	2.81	11	9	7	14	NE	NE	NE	Luther M. Dey, Sgt. Sig. Corps.
Schuylkill.	Girardville.	...	...	4.51	9	16	3	11	NW	W	NW	E. C. Wagner.
Snyder.	Selinsgrove.	85.5	58.8	3.13	7	7	14	9	SE	SE	SE	J. M. Boyer.
Somerset,	Somerset,	89.2	58.0	7.84	10	9	8	13	NW	NW	NW	W. M. Schrock,
Sullivan.	Eagles Mere.	81.4	58.1	7.11	10	12	5	13	SW	SW	SW	E. S. Chase.
Tioga.	Wellsboro',	68.4	54.2	4.39	11	4	11	15	S	S	S	H. D. Deming.
Union.*	Lewisburg.	...	...	3.70	10	8	15	7	SW	SW	SW	F. O. Whitman.
Warren,	Columbus.	69.7	47.7	7.10	12	9	10	11	SW	SW	SW	Wm. Loveland.
Washington.	Canonsburg.	...	...	...	...	...	...	...	...	...		A. L. Runion, M.D
Wayne.	Honesdale.	70.9	56.4	4.55	13	...	...	...	...	...		John Torrey.
Westmoreland.	Ligonier.	85.0	58.0	8.54	13	15	8	7	...	...	...	J. T. Ambrose.
Wyoming.*	South Eaton.	...	...	2.05	9	12	5	13	NW	NW	NW	Benj. M. Hall.
York.*	York,	82.5	59.0	4.55	9	20	3	7	NW	NW	NW	Mrs. L. H. Grenewald.

*Observations taken at 8 A. M. and 8 P. M.

†Observations taken at 12 noon.

PRECIPITATION FOR SEPTEMBER, 1890.

	Erie.	New Castle.	Greenville.	Columbus.	Pittsburgh.	Uniontown.*	Clarion.	Indiana.	Johnstown.	Somerset.	Grampian Hills.	Emporium.	Blue Knob.	Phillipsburg.	Petersburg.	Huntingdon.	Hollidaysburg.	Altoona.	Chambersburg.	State College.	York.	Lock Haven.	Wellsboro'.	Harrisburg.	Selinsgrove.	Lancaster.
1,																										*
2,																										*
3,																										*
4,																										*
5,			.11		1.11	.36		.60	.15	1.55	.16	.33		.40			.07	.28				.34	.04			*
6,	.18	.52	.10	.15	.50	.81		1.20	.50	.90	.24	.15	.40	.35			.31	.03		.08		.11		.01	.10	*
7,					.02	.13		.60	.08				.20				.44	.05		.15						*
8,	.18	.72	.03	.05	.22				.08	.70	.85	.35	.30	.12	.11		.19	.12		.08		.02		.06		*
9,	.06	.42	.02	.02	.18	.15		1.50	1.74	1.15	.24	.28	.90	.10	.09		1.60	.10		.23		.12	.06			*
10,	.60	.92	1.46	2.50	.04	.72		.60	.60	.35	1.02	2.41	.60	1.80		.80	.42	1.43		.16		.88	2.94			*
11,	1.54	.05	2.14	1.50	.05			.35	.02		.14	.31	.70	.10	.02	.90	.20	.05		.05	.01	.08	.02	.05	.01	*
12,	1.36	2.45	1.39	1.74	.39	.37		.50	.03		.96	2.30	.50				.13	.04		.12	2.95	.05	.15	1.09	1.64	*
13,	.06	.10	.14	.04	.18			.10	.11		.27	.55	.20	.14			.01	.23		.02	.05	.80	.54	.49		*
14,															.02						.41	.01		.08	.34	
15,	.06	.56						.10													.33			.28		.40
16,	.42	.05	.22	.50	.76	1.37		.95	1.03	1.35	.42	.69	1.00	.73	1.02	.90	.73	.53		.64	.03	.66	.39	.10	.46	
17,	.08		.04							.20			.10					.05		.03	.14	.01		.10	.10	.05
18,																										
19,	.21	.35	.13	.20	.22	.23		.25		.12	.18	.10	.10		.05							.01	.02			
20,				.01	.01				.04					.10						.06		.04				
21,																										
22.															.04		.05	.03								
23,																										
24,																										
25,		.31																								
26,	.35	.13	.40	.34	.33	1.50		.50	1.16	1.20	.85	.39	1.10	.70	.80	.80	.66	.86		.54	.48	.45	.18	.62	48	.69
27.	.06		.01	.05	.24	1.69		.85	.28	.32	.54	.05	.50	.40	.20	.15	.37	.18		.13	15	.29	.05	01		.10
28,									.03					.25												
29,																										
30,																										
31,																										
	5.16	7.48	6.19	7.10	4.24	6.73	. . .	8.10	5.85	7.84	5.87	7.91	6.60	5.19	2.35	3.55	5.18	3 98	. . .	2.29	4.55	3.87	4.39	2.89	3.13	1.24

*No record.

PRECIPITATION FOR SEPTEMBER, 1890—*Continued.*

	Le Roy.	Eagles Mere.	Myerstown.	Wysox.	Catawissa.	Girardville.	Wilkes-Barre.	South Eaton.	Drifton.	Pottstown.	West Chester.	Coatesville.	Kennett Square.	Dyberry.	Honesdale.	Quakertown.	Swarthmore.	Philadelphia.	Selsholtzville.	Frederick.	Ottsville.	Smith's Corner.	Doylestown.	Lansdale.	Forks of Neshaminy.	Germantown.
1.							.04																			
2.																										
3.																										
4.																										
5.	.10	.08		.56							.03		.02		.04			.02		.26			.21		.05	.05
6.	.04				.15		.06	.10			.01		.08		.03	.05	.20	.39							.01	
7.			.07						.07					.30	.38											
8.																										
9.	.04	.82		.41	.02			.17						.33	.75									.35		
10.	1.28	1.17		.89				.09						.17	.05											.20
11.	.18	.94	.25	.09		.40	.90	.07		.28	.15	.20	.02	.30	.22	.30	.26	.17	.36	.07	.20	.24	.20		24	.60
12.	.12	1.10	2.71	.86	.60	1.20		.68	1.71	.97	.57	.66	1.71	1.05	2.20	.48	.03	.21	1.25	.67	.64	.65	.57	.40	.35	
13.	1.62	1.28	.71	05	.74	.80	.08	.20	.48	.20	.47	.61	.33	1.56	.09	1.23	.08	.09	.82	.81	.15	.34	.22	.85	.20	.05
14.		.06	.05		.42	.48	.92	.05	.06	.08	.02	.05	.02	.11	.13	.17		.01	.58		.10	.06			.02	73
15.		.50	.22	.64	.27	.58			.72	1 53	.70	.87	.75	.04	.23	1.02	1.02	.54	.45	.97	1.15	.90	.55	.35	.81	.40
16.	1.68	.64		.66	.26	.51	.14	.44	.28	.42	1.01	.06	1.04	.17	.07	1.04	.12	.05	.08	.12	.28	.05	.72	.20	.26	.22
17.			.17			.06				.13	.02	.08			.03	.07	.08	.05	.06	.03	.06	.04	.11		.37	
18.																										
19.																										
20.	.06																									
21.																										
22.																										
23.																									.01	
24.																										
25.									.23																	
26.	.12	.48	.97	.15	.15	.39	.26	.25		.40	.80	.57	.89	.35	.33	.44	.57	.54	.47	.40	.38	.37	.67	.15	.59	.57
27.	.21			.06	.20	.09	.02				.18	.26	.14			.02	.26	.24		.03	.03	.03	.03	.37	.13	.01
28.											.02		.02													
29.																										
30.																										
31.																										
	5.45	7.11	5.15	4.37	2.80	4.51	2.42	2.05	3.55	4.01	4.07	3.36	5.02	4.40	4 55	4.82	2.62	2.31	4.07	3.35	2.99	2.68	3.28	2.67	3.04	2.83

PRECIPITATION FOR SEPTEMBER, 1890—*Continued.*

	Point Pleasant.	Bethlehem.	Canonsburg.	Carlisle.	McConnellsburg.	Waynesburg.	Lewisburg.	Mauch Chunk.	Nisbet.	Charlesville.	Lynnport.	Gettysburg.	Lewistown.	Tipton.	Condersport.	Coopersburg.	Westtown.	Meadville.	Ligonier.	Scranton.	Phœnixville.	Hamburg.	Browers Lock.	Reading.
1.																	*							
2.																								
3.																								
4.										1.06				.10										
5.								.31		.70				.05			.01		.62					.01
6.		.11		.10	.15	1.80	.07	.13		.31				.09					.76					.02
7.								.12											.09					
8.						.40	.04			.22				.43					.16					
9.								.08	.50	.34				.90				.01	2.45					
10.						.20			.30									1.23	1.05					
11.		.52		12	.46		.02	.17	.30	1.20				.18		.40	.20	1.38	.10		.11		.16	.01
12.	.85	1.36		.31	.75		.14	1.72		.66				.05		1.12	.37	2.35	.18		.76	1.06	09	1.66
13.	.24			2.23		.40	1.75	43	1.30							1.02		.07	.17		.38	.68	.36	1.17
14.	15	.55		.20	09	.30		.32		.12						.32	.01				.01	.38		.01
15.	.80	.56		.10			.16	.75								.70	.90				.90	35	.74	32
16.				06	25	.60	1 02	.29	1.00	29				.77		.19	1 17	.22	1 05		.29	.20	.30	.01
17.		.18		28			.09									.02		.14			.06	.04	.25	01
18.																								
19.						.20												.06						
20.										.04									.13					
21.																								
22.																								
23.																								
24.																								
25.								*														1.03		
26.	.40	.23		*	.83	.80	30	.32	.30	.11				.95		.40	.74	.21	1.50		.52		.56	.75
27.				.72	.09	1.20	.11		.20					.15		.01	.20	.15	.28		.06		.08	.01
28.																								
29.																								
30.																								
31.																								
	2 44	3.51	. . .	4 12	2 62	5.90	3.70	4.64	3.90	3 05	5 20	. .	. . .	3.67	. . .	1.18	3.60	5.82	8.54	. .	3.09	3.94	2.54	3 98

*No record.

FOR OCTOBER, 1890.

TEMPERATURE.

The mean temperature of 59 stations for October, 1890, was 50°.9, which is about 1°.0 below the normal, and 3°.7 above the corresponding month of 1889.

The mean of the daily maximum and minimum temperatures 58°.7 and 43°.2 give an average daily range of 15°.5, and a monthly mean of 50°.9.

Highest monthly mean, 56°.4 at Uniontown.

Lowest monthly mean, 44°.8 at Eagles Mere.

Highest temperature recorded during the month, 81°.0 on the 15th at Selinsgrove.

Lowest temperature, 21°.0 on the 31st at Dyberry.

Greatest local monthly range, 55° at Wilkes-Barre.

Least local monthly range, 36° at Altoona.

Greatest daily range, 43° at Huntingdon on the 9th.

Least daily range, 1°.0 at Waynesburg on the 21st.

From January 1, 1890, to October 31, 1890, the excess in temperature at Philadelphia was 656°, at Erie 113° and at Pittsburgh 652°.

The coldest period of the month was on the 31st.

BAROMETER.

The mean pressure for the month, 29.92, is about .15 below the normal. At the U S. Signal Service Stations, the highest observed was 30.37 at Philadelphia on the 9th, and the lowest 29.28 at Erie on the 29.

PRECIPITATION.

The average rainfall 5.87 inches for the month, is an excess of 2.50.

The largest monthly totals in inches were Eagles Mere, 8.41; Uniontown, 7.41; Dyberry, 7.39; Lancaster, 7.34; Quakertown, 7.25; Columbus, 7.25; Somerset, 7.12.

The least were Mauch Chunk, 4.03; Altoona, 4.12; Wysox, 4.24; Wellsboro', 4.69; Meadville, 4.75; Philadelphia, 4.82; Wilkes-Barre, 4.85.

With the exception of the 9th, precipitation fell on every day on some sections of the state.

The following totals in snowfall were reported: Somerset, 5.25; Eagles Mere, 4.15; Grampian Hills, 3.50; Columbus, 3.00; Meadville, 2.25; Rimersburg, 1.75 and Greenville, 1.00 inches. The snowfalls occurred on the 27th, 28th, 29th, 30th and 31st.

WIND AND WEATHER.

The prevailing wind was from the west. The weather was nearly normal in temperature, and above in precipitation and humidity.

Average number: Rainy days, 15; clear days, 6; fair days, 8; cloudy days, 17.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for October, 1890.*

County.	Station.	Elevation above sea level. (feet).	Barometer Reduced to Sea Level. Mean.	Highest.	Lowest.	Temperature. Mean.	Maximum. Highest.	Date.	Minimum. Lowest.	Date.	Mean of maximum.	Mean of minimum.	Daily Range. Mean.	Greatest.	Date.	Least.	Date.
Adams,*	Gettysburg,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Allegheny,*	Pittsburgh.	847	29.950	30.290	29.310	54.2	78.0	13	35.0	31	61.0	47.5	13.5	25.0	13	5.0	23
Bedford,	Charlesville,	1,300	...	...	...	50.0	65.0	10	28.0	31	58.6	42.3	16.3	32.0	10	4.5	23
Blair,†	Altoona,	1,181	...	...	...	53.9	74.0	11	38.0	29, 31	68.0	46.9	13.9	25.0	9	1.0	25
Bradford.	Le Roy,	1,400	...	...	...	48.7	70.0	1,3,10	29.0	31	54.0	43.6	10.4	24.0	9	2.0	20
Bucks,	Quakertown,	536	29.980	30.340	29.360	50.6	76.0	1	22.0	31	59.9	42.5	17.4	30.5	9	6.0	24
Cambria,*	Johnstown.	1,184	29.995	30.377	29.350	52.4	76.0	10	34.0	22, 31	60.4	44.5	15.9	31.0	9	5.0	23
Cameron,	Emporium,	1,080	...	...	...	51.2	75.0	4, 5	29.0	31	57.5	40.3	17.2	34.0	18	6.0	13
Carbon,*	Mauch Chunk (30 days),	550	...	...	...	52.5	75.0	1	23.0	31	60.7	44.3	16.4	37.0	22	4.0	7
Centre,	State College— Agricultural Experiment Station,	1,191	29.892	30.324	29.233	49.3	73.0	10	28.0	31	56.3	42.9	13.4	31.0	10	3.0	13
Chester.	West Chester,	455	29.903	30.308	29.275	52.5	74.0	4	33.0	31	54.7	47.0	12.7	23.0	10	4.0	2
Clarion,	Clarion— State Normal School (28 days)...	1,530	...	...	...	48.8	73.0	10	29.0	28, 29	55.	39.7	15.8	27.5	10	4.0	12
Clearfield.	Grampian Hills.	1,450	...	...	...	48.2	74.0	10	30.0	31	55.	43.0	12.3	30.0	18	...	...
Clinton,	Lock Haven.	560	...	...	...	50.7	75.0	3,4,5	26.0	31	58.	43.3	15.1	34.0	18	2.0	23
Columbia,	Catawissa,	491	...	...	...	51.0	72.0	1	29.0	31	57.	45.0	12.3	26.0	10	5.0	25
Crawford.	Meadville.	1,300	29.899	30,300	29.250	48.7	71.0	9	32.0	22, 30	56.	40.7	16.0	...		...	...
Cumberland,	Carlisle.	480	...	...	...	52.8	79.0	5	31.0	31	62.	44.4	17.7	38.0		6.0	5
Dauphin,*	Harrisburg,	361	29.968	30.368	29.421	52.8	76.0	5	34.0	31	59.	46.9	12.6	25.0			6
Delaware,	Swarthmore— Swarthmore College,	190	29.903	30.303	29.415	58.4	77.0	1	31.0	31	60.9	48.3	12.6	28.2		5.	7
Erie,*	Erie,	681	29.900	30.280	29.280	51.0	73.0	2	32.0	30	57.0	46.0	11.0	24.0	18		12
Fayette.	Uniontown,	1,000	29.981	30.290	29.545	56.4	79.0	13	36.0	28, 29	64.0	48.8	15.2	29.0	18		20
Franklin,*	Chambersburg— Wilson Female College,	618	29.928	30.298	29.434	53.2	78.0	5	28.0	31	62.8	43.7	19.1	36.0			13
Fulton,	McConnellsburg.	875	...	...	...	52.5	78.0	5	32.0	31	61.4	44.2	17.2	32.0	18	6.	23
Greene,	Waynesburg.	750	...	...	...	45.1	71.0	13	27.0	31	50.9	40.8	10.1	29.0	9	1.	21
Huntingdon,*	Huntingdon— The Normal College,	650	...	...	...	50.6	78.0	11	24.0	31	61	39.9	21.4	43.0		5.0	13
Indiana,	Indiana— State Normal School.	1,350	29.980	30.255	29.447	49.9	76.0	10	28.0	31	57.3	41.3	16.0	30.0		4.0	23
Lancaster,	Lancaster.	418	29.957	30.355	29.457	52.9	76.0	10	27.0	23	6	41.0	20.6	37.5		7.0	2
Lawrence,	New Castle,	932	...	...	...	52.7	76.0	8	28.0	22, 31	59.	38.9	20.6	35.0	18	4.0	20

Lebanon,	Annville— Lebanon Valley College,	339	...	...	...	...	...	...	...	...			...	...		...	...
Lehigh,	Coopersburg,	590	...	...	...	58.8	74.0	1	30.0	31	59.	45.5	14.0	26.0		5.0	2
Luzerne,	Drifton— Drifton Hospital,	1,655	...	...	...	47.6	69.0	1	28.0	31	56.	41	15.4	25.0	10	5.0	25
Lycoming,*	Nisbet,	550	...	...	...	50.7	...	...	...	...			...	...			
Mercer,*	Greenville— Thiel College,	1,000	29.880	30.259	29.230	50.2	73.0	5	32.0	22	58.	42.0	16.5	33.0	18	.5	12
Mifflin,	Lewistown,	500	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Montgomery,	Pottstown,	150	...	...	...	54.0	75.0	1,5,10	28.0	31	61.	46.3	15.0	31.0	1	5.0	7
Northampton,	Bethlehem,	380	...	...	...	52.9	75.0	1	27.0	31	60.	44.0	16.0	30.0	22	6.0	7
Philadelphia,*	Philadelphia— Signal Office,	117	29.980	30.370	29.430	55.5	79.0	1	36.0	31	61.5	49.5	12.0	24.0	1	5.0	24
Schuylkill,	Girardville,	1,000	29.885	30.288	29.353	52.0	70.0	1.4.10	31.0	30	56.	42.7	13.7	32.0	10	5.0	20
Snyder,	Selinsgrove,	445	...	...	...	51.7	81.0	15	...	...	64.	38.6	26.2			...	
Somerset,	Somerset,	2,250	...	...	...	49.0	75.0	5	28.0	22, 28	58.	39.8	18.5	41.0	9	5.0	2
Sullivan,	Eagles Mere,	2,060	29.998	30.390	29.457	44.8	64.0	3,5,10	29.0	31	49.	40.5	9.1	20.0	2	3.0	20
Tioga,	Wellsboro',	1,827	29.912	30.367	29.348	48.1	75.0	6	28.0	22	56.	39.9	16.7	36.0	18	3.0	21
Union,*	Lewisburg,	450	...	...	...	52.3	75.0	3,10	26.0	31	60.	44.1	16.5	32.0	10	2.0	
Warren,	Columbus (29 days),	1,410	...	...	...	48.6	76.0	1	28.0	18, 22	56.	41.2	14.8	39.0	18	2.0	27
Washington,	Canonsburg,	950	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wayne,	Honesdale,	1,000	...	...	...	48.2	69.0	1	25.0	31	55.2	41.2	14.0	30.0	10	4.0	7
Westmoreland,	Ligonier,	1,750	...	...	...	52.3	76.9	10	28.0	22	63.	40.8	53.0	...	...	...	
Wyoming,*	South Eaton,	660	...	...	...	49.8	75.0	1	26.0	31	56.	41.2	23.3	32.0	1	3.0	14
York,*	York,	385	29.898	30.207	29.399	52.9	77.0	15	28.0	31	61.	44.4	17.1	38.0	15	6.5	25

*Observations taken at 8 A. M. and 8 P. M.

+Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORT—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.			NUMBER OF DAYS.			WIND. PREVAILING DIRECTION.			OBSERVERS.
				Total inches.	Total snowfall during month.	Number of days rainfall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Adams,*	Gettysburg,	....	....	....	....	....	....	....	....	....	....	....	Prof. E. S. Breidenbaugh.
Allegheny,*	Pittsburgh,	75.8	44.8	5.66	....	20	1	8	22	W	W	W	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	87.0	47.0	5.42	....	21	5	9	17	SW	SW	SW	Miss E. A. G. Apple.
Blair,†	Altoona,	71.5	44.5	4.12	....	16	....	....	....	....	....	....	Dr. Charles B. Dudley.
Bradford,	Le Roy,	....	....	5.37	....	18	6	5	20	SW	W	W	Geo. W. T. Warburton.
Bucks,	Quakertown,	82.2	44.9	7.25	....	17	8	6	17	NW	NW	NW	J. L. Heacock.
Cambria,*	Johnstown,	90.2	47.0	5.26	....	23	4	9	18	S	S	S	E. C. Lorentz.
Cameron,	Emporium,	....	....	5.30	....	13	6	6	19	NW	NW	W	T. B. Lloyd.
Carbon,*	Mauch Chunk (30 days),	....	....	4.03	....	12	9	6	16	NW	NW	NW	John J. Boyd.
Centre,	State College Agricultural Experiment Station,	79.5	42.7	5.24	....	21	2	10	19	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	76.0	45.0	6.28	....	19	9	8	14	NW	NW	NW	Jesse C. Green, D. D. S.
Clarion,	Clarion—State Normal School (28 days),	92.7	46.5	5.19	....	6	7	7	14	SW	SW	SW	C. M. Thomas, B. S.
Clearfield,	Grampian Hills,	....	....	6.36	3.50	18	2	10	19	W	W	W	Nathan Moore.
Clinton,	Lock Haven,	....	....	5.38	....	17	3	10	18	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,	....	....	5.99	....	14	....	....	....	....	....	....	Robert M. Graham.
Crawford,	Meadville,	87.0	44.2	4.75	2.25	20	4	8	19	SW	W	W	J & B. H. Metcalf.
Cumberland,	Carlisle,	88.5	49.0	5.72	....	15	5	11	15	N	W	W	J. E. Pague.
Dauphin,*	Harrisburg,	75.6	44 6	6.40	....	15	8	6	17	W	W	W	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore—Swarthmore College,	83.0	48.0	6.16	....	12	1	12	18	W	NW	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	82.0	45.0	6.13	....	22	4	6	21	SW	SW	SW	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	....	....	7.41	....	15	5	15	11	NW	NW	W	Wm. Hunt.
Franklin,*	Chambersburg—Wilson Female College,	85.4	45.8	5.48	....	10	8	8	15	....	....	....	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	81.6	50.7	6.92	....	14	8	10	13	N	N	NW	Thomas F. Sloan.
Greene,	Waynesburg,	....	....	....	....	....	....	....	....	....	....	....	Capt. W. C. Kimber.
Huntingdon,*	Huntingdon,—The Normal College,	....	....	5.04	....	13	12	8	11	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana—State Normal School,	82.3	47.7	5.31	....	17	4	9	18	NW	W	NW	Prof. S. C. Schmucker.
Lancaster,	Lancaster,	82.2	46.0	7.34	....	15	3	10	18	NW	NW	NW	Lewis T. Lampe.
Lawrence,	New Castle,	91.6	50.6	6.26	....	10	5	8	18	NW	W	NW	Wm. T. Butz.

Lebanon.	Annville— Lebanon Valley College.	....	....	6.04	....	16	8	6	17	....	....	....	Geo. W. Bowman, A.M., Ph.D.
Lehigh,	Coopersburg.	....	....	....	....	....		..	...	SE	SE	SE	M. H. Boye.
Luzerne.	Drifton— Drifton Hospital.	....	....	5.50	....	11		..	...	....	....	....	H. D. Miller, M. D.
Lycoming.*	Nisbet,	....	....	6.40	....	12			...	....	....	....	John S. Gibson, P. M.
Mercer.*	Greenville— Thiel College.	94.0	44.0	6.85	1.00	28	2	6	23	SE	....	N	Prof. S. H. Miller.
Mifflin,	Lewistown.	....	....	....	....	....			...	....	....	....	Culbertson & Lantz.
Montgomery,	Pottstown,	....	....	6.10	....	11	12	5	14	W	W	W	Charles Moore, D.D.S.
Northampton,	Bethlehem,	80.0	48.0	6.17	....	10	5	3	13	W	W	W	Lerch & Rice.
Philadelphia.*	Philadelphia— Signal Office.	73.9	45.4	4.82	....	15	8	2	20	NW	NW	NW	Luther M. Dey, Sgt. Sig. Corps.
Schuylkill,	Girardville,	....	....	6.24	....	14			16	NW	NW	W	E. C. Wagner.
Snyder,	Selinsgrove,	93.7	45.8	6.97	....	12	3	12	16	NW	NW	NW	J. M. Boyer.
Somerset,	Somerset.	82.1	45.3	7.12	5.25	16	1	9	21	NW	NW	NW	W. M. Schrock.
Sullivan.	Eagles Mere,	82.5	40.3	8.41	4.15	16	5	6	20	SW	SW	SW	E. S. Chase.
Tioga,	Wellsboro',	75.1	46.2	4.60	....	17	3	8	22	NW	NW	NW	H. D. Deming.
Union.*	Lewisburg.	....	....	5.74	....	8	6	12	13	W	W	W	F. O. Whitman.
Warren,	Columbus (29 days)	74 0	38.6	7.25	3.00	....		9	20	SW	SW	SW	Wm. Loveland.
Washington,	Canonsburg.	....	....	....	....	....				....	....	....	A. L. Runion, M. D
Wayne,	Honesdale,	70.7	44.3	6.77	....	14				....	....	....	John Torrey.
Westmoreland,	Ligonier,	81.0	50.0	5.50	....	17	7	9	15	....	....	....	J. T. Ambrose.
Wyoming.	South Eaton,	....	....	5.18	....	12			19	NW	NW	NW	Benj. M. Hall.
York,	York.	80.7	47.0	6.60	....	17	9		18	NW	NW	NW	Mrs. L. H. Grenewalt.

* Observations taken at 8 A. M. and 8 P. M.

† Observations taken at 12 noon.

PRECIPITATION FOR OCTOBER, 1890.

	Altoona.	Bethlehem.	Blue Knob.	Browers Lock.	Carlisle.	Catawissa.	Chambersburg.	Charlesville.	Clarion.	Coatesville.	Columbus.	Coopersburg.	Doylestown.	Drifton.	Dyberry.	Eagles Mere.	Emporium.	Erie.	Forks of Neshaminy.	Frederick.	Germantown.	Girardville.	Grampian Hills.
1.								.20			.05							.02					
2.				.11		.17	.78	.96		.20	.30	.02	.15		.11			.14	.07	.05	.12	.42	.10
3.	.49	1.53		.78	.10	.50		.07	1.30	.53	.65	1.51	1.35	.58	1.01		.55	.32	.91	1.24	.97	.65	.61
4.									*							.32							
5.																		.01					
6.	.47	.70		.94	.60	.30	.60	.45		1.22	1.05	.53	.57	1.30	.53	.79	.64	.62	.52	.97	.78	.90	1.15
7.	.05	.15		.20	.09	.54		.09	1.25	.13	.11	.15	.33	.14	.90	.18	.09	.08	.23	.24	.30	.42	.08
8.					.15		.08			.29		.09			.37					.04	.05		
9.											*												
10.											*							.01					.47
11.	.14						.06	.01		.03	.09												
12.	.23	.05			.12	.21		.13		.10	.31	.04		.40		.37	.35	.30	.02	.02	.02	.15	.55
13.	.13				.18	.14	.21	.27		.01						.17		.04	.01			.25	.04
14.	.17	.30		.26	.20	.05	.42	.21		.17	.62	.46	.30		.45	.32	.20	.74	.29	.25	.22		.14
15.	.02										.03							.04			.02		
16.		.98			.01	.34		.46		.45	.40	.38	.17	.39	.30	.82	.15	.10	.20	.31	.60	.45	.70
17.	.34			.91	.47		.68	.02	.64	.33	.22	.54	.67	.21	.85		.78	.13	.70	.55		.20	
18.																							.18
19.	.03	.19		.10	.11	1.20		.07		.34	.70	.07	.41	.83	.95	.68	.25	.56	.22	.24	.10	.67	
20.	.07	.08		.12	.30	.15		.02		.06	.44	.06	.04			.98	.26	.53	.13	.07	.23	.32	.30
21.	.05				.10	.03		.02	.68		.08	.02				.45			.06		.24		
22.									.68														
23.	.86	1.85		1.11	1.20	1.39	1.75	2.18		1.58	.83	1.26	.98	.98	.75	1.06	1.17	.61	1.22	1.00	.94	1.15	1.00
24.	.82			.53	1.88	.69	.57	.02		.60	.02	.57	1.02	.43	.90	.87	.49	.04	.85	.18	.73	.42	.30
25.				.09				.03			.07			.06		.37			.03	.02	.08		
26.									.64		.17	.11				.32		.51					.10
27.								.05			.10												
28.								.04			.04							.10				.02	.08
29.	.23	.34		.19	.15	.28	.33	.10		.30	.22	.23	.27	.18	.21	.43	.30	.37	.31	18	.20	.22	28
30.	.02								*		.58				.06	.28	.07	.67					.25
31.								.02	*		.17							.19					.08
	4.12	6.17	. . .	5.34	5.72	5.99	5.48	5.42	5.19	6.34	7.25	6.04	6.26	5.50	7.39	8.41	5.30	6.13	5.77	5.36	5.60	6.24	6.86

* No record.

PRECIPITATION FOR OCTOBER, 1890—*Continued.*

	Greenville.	Hamburg.	Harrisburg.	Hollidaysburg.	Honesdale.	Huntingdon.	Indiana.	Johnstown.	Kennett Square.	Lancaster.	Lansdale.	Le Roy.	Lewisburg.	Ligonier.	Lock Haven.	Mauch Chunk.	Meadville.	McConnellsburg.	Myerstown.	New Castle.	Nisbet.	Ottsville.	Petersburg.
1.	.08	. . .	. . .	. . .	. . .	.50	.15	.03	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.25	.11	. . .	. . .	. . .	. . .	. . .
2.	.25	.06	.10	.55	.97	. . .	.65	.50	.33	.21	. . .	. . .	. . .	.90	.20	.08	.19	.14	.07	.30	. . .	.04	.84
3.	.13	.22	1.20	.12	.34	.70	.20	.21	.07	.87	1.17	.71	.82	. . .	.50	.86	.11	1.00	.20	. . .	.70	1.40	. . .
4.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	*	. . .	. . .	. . .	. . .	. . .	. . .	. . .
5.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.02	. . .	. . .	. . .	. . .	. . .	. . .
6.	.85	.54	.62	.55	.55	.70	.35	.22	1.13	1.29	.37	.45	. . .	.15	.63	.48	.59	.90	.57	.39	.70	.47	.81
7.	.01	.09	.26	. . .	.59	.30	.07	.08	.22	.22	.71	.45	.60	.06	.10	.28	.04	.06	.15	. . .	.30	.28	.15
8.	. . .	.08	.02	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.04	. . .
9.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
10.	.18	. . .	. . .	.05	.24	. . .	. . .	.03	. . .	. . .	. . .	.10	. . .	.15	.01	. . .	.12	. . .	. . .	.13	.20	. . .	.01
11.	.02	. . .	.08	.02	. . .	.02	. . .	.02	. . .	.02	. . .	. . .	. . .	.01	. . .	. . .	. . .	. . .	.01	. . .	. . .	. . .	. . .
12.	.77	.07	.22	.35	. . .	.03	.60	.44	.06	.26	.15	.08	.10	.43	.33	.11	.44	.17	.11	.80	.30	. . .	.35
13.	.04	. . .	. . .	.09	. . .	. . .	.17	.42	.08	.02	. . .	. . .	. . .	.53	. . .	. . .	.05	.20	. . .	. . .	.20	. . .	.05
15.	.46	.48	.29	.21	.21	.06	.12	.34	.24	.24	.20	.07	.35	.32	.12	.29	.45	.25	.41	1.30	. . .	.35	.30
14.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
16.	1.02	.28	.30	.25	1.05	.02	. . .	.33	.04	.40	. . .	. . .	. . .	.33	.25	.25	.37	.70	.63	.23	.30	.08	. . .
17.	.20	.84	.16	.07	. . .	.04	.57	.12	.76	.57	1.35	.09	.32	. . .	.30	. . .	.20	. . .	. . .	. . .	. . .	.95	.60
18.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.01	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.17	. . .	. . .	. . .	. . .
19.	.52	.40	.41	.06	.90	. . .	.25	.22	.11	.25	.45	.12	. . .	. . .	.11	. . .	.49	.25	.37	.69	.20	.18	. . .
20.	.52	.13	.03	.18	.02	.28	.15	.10	.08	.11	.30	.35	. . .	.38	.08	.02	.03	.05	.04	.54	.10	.03	.15
21.	.05	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.01	. . .	.11	.35	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
22.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
23.	.75	1.01	1.29	1.84	.93	1.70	.90	1.05	1.13	1.99	1.15	.74	. . .	.81	1.46	.88	.70	1.91	1.53	.68	. . .	1.00	1.31
24.	.05	.23	1.20	.19	.68	.44	.10	.12	.43	.83	.44	1.70	3.09	.13	.98	.43	. . .	.45	.95	. . .	2.80	.80	.72
25.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.04	. . .	. . .	.02	. . .	.02	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.06	. . .
26.	.01	. . .	. . .	.04	.02	. . .	. . .	.01	. . .	. . .	. . .	.16	. . .	. . .	.05	. . .	.22	. . .	. . .	. . .	.30	. . .	. . .
27.	.16	. . .	. . .	.04	. . .	. . .	.20	.03	. . .	. . .	. . .	.06	. . .	. . .	. . .	. . .	.07	. . .	. . .	. . .	. . .	. . .	. . .
28.	.06	. . .	. . .	.09	. . .	. . .	.03	.16	. . .	. . .	. . .	.01	. . .	.15	.02	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
29.	.21	.13	.22	.29	.16	.25	.45	.47	.22	.05	.23	.06	. . .	.52	.11	.33	.19	.73	.31	1.20	. . .	.14	.30
30.	.42	. . .	. . .	.03	.11	. . .	.35	.30	. . .	. . .	. . .	.09	.11	.53	.11	.02	.20	. . .	. . .	. . .	.30	. . .	. . .
31.	.09	. . .	. . .	. . .	. . .	. . .	. . .	.05	. . .	. . .	. . .	. . .	. . .	.08	. . .	. . .	.02	. . .	. . .	. . .	. . .	. . .	. . .
	6.85	5.26	6.40	5.02	6.77	5.04	5.31	5.26	5.49	7.34	6.52	5.37	5.74	5.50	5.36	4.03	4.75	6.92	5.52	6.26	6.40	5.82	5.59

* No record.

PRECIPITATION FOR OCTOBER, 1890—*Continued.*

	Philadelphia.	Phillipsburg.	Phœnixville.	Pittsburgh.	Point Pleasant.	Pottstown.	Quakertown.	Reading.	Seisholtzville.	Selinsgrove.	Smith's Corner.	Somerset.	South Eaton.	State College.	Swarthmore.	Tipton.	Uniontown.	Wellsboro'.	West Chester.	Westtown.	Wilkes-Barre.	Wysox.	York.
1.				.58								.40		.02			.42						
2.	.07		.10	.61	.09	.12	.06	.10	.03		.06	.75		.03	.23	.70	1.26		.32	1.22		.36	.01
3.	.76	.70	.75	.02	1.01	.80	2.07	.93	1.30	1.34	1.17		1.10	.47	1.11			.10	.64		.67		1.50
4.														.03							.01		
5.																						.02	
6.	.88	.40	.80	.27		1.00	.50	.65	.45	.38	.53	.50	.24	.53	.97	.70	.45	.44	1.06	1.08	.31	.61	.80
7.	.27	.35	.17	.02	.98	.32	.24	.23	.20	.22	.35		.23	.05				.05	.21	.42	.38	.08	.18
8.	.01	.08	.02				.13		.04		.02				.02				.08		.30		
9.																							
10.				.14										.02		.12	.93	.04				.07	
11.		.10		.01									.01				.05						.01
12.		.30	.01	.70	.03		.09	.04	.06	.20	.05	.55		.46		.30	1.08	.02	.08		.04	.01	.21
13.		.20		1.21				.01		.17		1.05		.01		.30	.24		.02	.18		.15	.07
14.	.18		.24	.18	.30	.20	.46	.32	.44	.03	.27	.40	.08	.23	.19	.20	.42	.08	.22		.16	.15	.08
15.												.45											
16.	.17		.26	.50	.29	.90	.50	.20	.35	.45	.29		.05	.18		.50	.45	.04	.42	.70	.08	.19	.75
17.	.55	.60	.51	.02	.78		.45	.66			.73		.44	.28	.90	.05		.28	.50				.10
18.				.03								.40				.10						.05	
19.	.13	.30	.10	.19		.38	.23	.29	.25	1.30	.43	.06	.94	.20	.03		.41	.14	.11	.04	.69	.22	.35
20.	.12	.20	.16	.03	.60	.15	.05	.01		.15	.10	.15	.05	.44	.03	.24	.08	.26	.11	.09	.01	.14	.12
21.	.13		.02				.04				.06								.03				.01
22.																					.06		
23.	.82	.87	1.12	.31	.98	1.55	1.18	.95	1.32	1.00	1.07	1.25	1.01	1.46	.90	2.20	.79	2.68	1.54		.55	1.64	1.28
24.	.54	1.00	.68		.59	.50	.90	.47	.75	1.71	.02	.20	.94	.55	1.20			.16	.47	1.80	.91	.06	1.02
25.	.02		.05				.06	.02	.07		.04			.03	.36				.05			.02	.03
26.							.04									.02		.10	.01			.08	
27.		.08		.08				.01				.20		.02		.03	.39	.02					
28.		.01		08								.15		.06			.07						
29.	.17	.05	13	.43	.11	.18	.23	.42	.34	.02	.20	.45	.09	.16	.22	.25	.37	.16	.38	.22	.10	.38	.08
30.		.05		.25								.16		.01		.01		.12	.03		.01	.01	
31.		.02																					
	4.82	5.31	5 12	5.66	5.76	6.10	7.25	5.31	5.60	6.97	5.99	7.12	5.18	5.24	6.16	5.72	7.41	4.69	6.28	5.75	4.85	4.24	6.06

FOR NOVEMBER, 1890.

TEMPERATURE.

The mean temperature of 59 stations for November, 1890, was 41°.5, which is 2°.0 over the normal, and 0°.4 below that of the corresponding month of 1889.

The mean of the daily maximum and minimum temperatures 50°.4 and 33°.1 give an average daily range of 17°.3, and a monthly mean of 41°.7.

Highest monthly mean, 47°.8 at Uniontown.

Lowest monthly mean, 34°.0 at Wilkes-Barre.

Highest temperature recorded during the month, 78°.0 on the 7th, at Uniontown.

Lowest temperature, 10°.0 on the 29th at Wilkes-Barre.

Greatest local monthly range, 58° at Charlesville.

Least local monthly range, 42° at Catawissa, Harrisburg, Selinsgrove and Eagles Mere.

Greatest daily range, 47° at Charlesville on the 12th.

Least daily range, 1° at Rimersburg on the 26th, Clarion the 4th and Petersburg the 27th.

From January 1, 1890, to November 30, 1890, the excess in temperature at Philadelphia was 755°, at Erie 144°, and at Pittsburgh 784°.

The coldest period of the month was on the 28th and 29th.

BAROMETER.

The mean pressure for the month 30.08, is about .03 above the normal. At the U. S. Signal Service Stations, the highest observed was 30.41 at Harrisburg on the 16th, and the lowest 29.53 at Erie on the 17th.

PRECIPITATION.

The average rainfall, 1.49 inches for the month, is a deficiency of 2.00 inches.

The largest monthly totals in inches were Columbus, 4.29; Erie, 3.32; and Somerset, 3.00.

The least were Blue Knob, 0.78; Philadelphia, 0.80; York, 0.80; Bethlehem, 0.82; Wellsboro', 0.93; Forks of Neshaminy, 0.95; and Westtown, 0.97.

The heaviest rainfall occurred on the 17th. The snow fall was light, and at most stations too small for measurement. The largest totals were Blue Knob, 5.5 inches; Grampian Hills, 3.5 inches, and Columbus 3.0 inches.

WIND AND WEATHER.

The prevailing wind was from the west. The weather was above the normal in temperature, and below in the amount of precipitation and number of rainy days.

Average number.—Rainy days, 8; clear days, 9; fair days, 10; cloudy days, 11.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for November, 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Least.	Date.
Allegheny,*	Pittsburgh,	847	30.100	30.390	29.570	45.4	73.0	17	23.0	28	52.3	38.6	13.7	28.0	21	4.0	26
Bedford,	Charlesville,	1,300	. . . .	. . . .	. . . .	42.5	73.0	17	15.0	28	55.1	30.6	24.5	47.0	8	5.0	12
Blair,†	Altoona,	1,181	. . . .	. . . .	. . . .	47.2	69.0	18	22.0	28	54.9	39.4	15.5	32.0	28	6.0	2
Bradford,	Wysox,	718	30.075	30.387	29.513	39.0	66.0	7	17.0	29	46.6	30.1	16.5	34.5	7	5.0	27
Bucks,	Quakertown,	536	30.080	30.450	29.590	40.1	63.0	18	18.0	29	51.9	30.1	21.3	34.5	6	9.0	11
Cambria,*	Johnstown,	1,184	30.129	30.438	29.600	43.7	72.0	9, 17	21.0	28	52.4	35.0	17.4	37.0	6	6.0	27
Cameron,	Emporium,	1,030	. . . .	. . . .	. . . .	41.5	67.0	7, 17	18.0	28	51.6	32.0	19.6	34.0	5	8.0	2
Carbon,*	Mauch Chunk (29 days),	550	. . . .	. . . .	. . . .	39.0	. . . .	. . . .	17.0	29	47.3	30.7	16.6	29.0	30	10.0	27
Centre,	State College— Agricultural Experiment Station,	1,191	30.030	30.377	29.443	41.2	66.0	7	17.0	28	49.3	34.1	15.2	31.0	6	4.0	19
Chester,	West Chester,	455	30.053	30.344	29.524	43.6	71.0	8	20.0	28	51.5	35.8	16.7	27.0	14	5.0	12
Clarion,	Clarion— State Normal School (27 days),	1,530	. . . .	. . . .	. . . .	41.7	68.0	6	17.0	28	46.8	28.7	18.1	33.0	21	1.0	4
Clearfield,	Grampian Hills,	1,450	. . . .	. . . .	. . . .	39.2	68.0	7, 9, 17	16.0	28	46.2	32.9	13.3	34.0	21	2.0	3
Clinton,	Lock Haven,	560	. . . .	. . . .	. . . .	41.9	66.0	16	15.0	28	50.1	32.6	17.5	36.0	21	4.0	19
Columbia,	Catawissa,	491	. . . .	. . . .	. . . .	43.0	64.0	7	22.0	28	48.5	34.6	13.9	29.0	7	4.0	26
Crawford,	Meadville,	1,300	30.058	30.450	29.600	40.2	65.0	17	15.0	28	45.9	34.5	11.4	. . . .	. . . .	. . . .	. . . .
Cumberland,	Carlisle,	480	. . . .	. . . .	. . . .	42.5	66.0	8	19.0	29	53.5	33.1	20.4	37.0	6	8.0	12
Dauphin,*	Harrisburg,	361	30.108	30.412	29.633	42.8	64.0	8	22.0	28	50.5	36.4	14.1	26.0	14	4.0	12
Delaware,	Swarthmore— Swarthmore College,	190	30.066	30.343	29.680	43.4	71.0	8	22.0	28	52.4	37.1	15.3	25.0	16	4.0	12
Erie,*	Erie,	681	30.030	30.390	29.530	42.0	66.0	17	26.0	27	48.0	36.0	12.0	27.0	21	4.0	10
Fayette,	Uniontown,	1,000	30.063	30.312	29.723	47.8	78.0	7	20.0	28	55.3	39.8	15.5	35.0	7	3.0	27
Franklin,	Chambersburg— Wilson Female College,	618	30.114	30.352	29.739	42.4	69.0	6	17.0	29	54.3	30.5	23.8	43.0	6	8.0	12
Fulton,	McConnellsburg,	875	. . . .	. . . .	. . . .	42.9	68.0	6	18.0	30	53.9	33.1	20.8	39.0	6	8.0	11
Huntingdon,*	Huntingdon— The Normal College,	650	. . . .	. . . .	. . . .	43.2	73.0	7	20.0	29	53.5	32.9	20.6	45.0	6	5.0	1
Indiana,	Indiana, State Normal School (26 days),	1,350	30.107	30.394	29.776	40.4	70.0	10	15.0	28	50.1	32.8	17.3	33.0	24	2.0	14
Lancaster,	Lancaster,	418	30.099	30.331	29.611	43.1	68.0	8, 9	25.0	27	53.6	34.5	19.1	35.5	19	8.5	12
Lawrence,	New Castle,	932	. . . .	. . . .	. . . .	43.7	68.0	17	14.0	28	51.0	31.8	19.2	37.0	21	5.0	27
Lebanon,	Myerstown,	474	30.056	30.319	29.671	40.5	67.0	8	19.0	29	51.6	31.3	20.3	35.0	5	10.0	11
Lehigh,	Coopersburg,	520	. . . .	. . . .	. . . .	41.7	69.0	8	21.0	8	53.2	34.2	19.0	30.0	25	8.0	12

Luzerne,	Drifton—																
	Drifton Hospital,	1,655	. . . .	. . . .	. . . .	. . .	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lycoming,*	Nisbet,	550	. . . .	. . . .	. . . .	40.3	. . . .	. . . .	. . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mercer,*	Greenville—																
	Thiel College,	1,000	30.016	30.377	29.532	41.4	66.0	17	14.0	28	49.8	33.1	16.7	34.5	21	5.4	11
Mifflin,	Pottstown,	150	. . . .	. . . .	. . . .	44.0	71.0	8	21.0	29	53.0	35.0	18.0	32.0	8	4.0	12
Northampton,	Bethlehem,	360	. . . .	. . . .	. . . .	43.4	68.0	8	21.0	28	50.6	32.8	17.8	34.0	6	6.0	12
Philadelphia,*	Philadelphia—																
	Signal Office,	117	30.102	30.410	29.657	46.4	70.0	8	28.0	28	54.2	38.9	15.3	27.0	7	7.0	3
Schuylkill,	Girardville,	1,000	30.048	30.424	29.685	40.7	62.0	6, 8	19.0	28	48.9	32.8	16.1	29.0	6	6.0	11
Snyder,	Selinsgrove,	445	. . . .	. . . .	. . . .	40.5	60.0	7, 25	18.0	28	47.2	33.8	13.4	27.0	7	3.0	12
Somerset,	Somerset,	2,250	. . . .	. . . .	. . . .	41.1	70.0	17	32.0	27, 28	55.2	31.7	23.5	35.0	7	10.0	12
Sullivan,	Eagles Mere,	2,060	30.136	30.431	29.825	34.8	54.0	7	12.0	28	40.4	28.8	11.6	21.0	25	4.0	10
Tioga,	Wellsboro',	1,327	30.039	30.349	29.458	36.2	65.0	7	16.0	28	44.8	30.0	14.8	31.0	7	2.0	18
Union,*	Lewisburg,	450	. . . .	. . . .	. . . .	42.0	64.0	7	19.0	28	55.5	32.6	18.9	32.0	7	6.0	12
Warren,	Columbus,	1,410	. . . .	. . . .	. . . .	39.3	68.0	6	14.0	28	46.7	32.0	14.7	34.0	21	2.0	26
Washington,	Canonsburg,	950	30.097	30.311	29.619	42.7	. . . .	. . . .	15.0	28	52.5	32.9	19.6	. . .	. . .	. . .	. . .
Wayne,	Honesdale,	1,000	. . . .	. . . .	. . . .	37.2	59.0	7	15.0	27, 29	44.8	29.6	15.2	30.0	7	3.0	18
Westmoreland,	Ligonier,	1,750	. . . .	. . . .	. . . .	43.7	. . . .	. . . .	15.0	28	55.3	32.0	23.3	. . .	. . .	. . .	. . .
Wyoming,*	South Eaton,	660	. . . .	. . . .	. . . .	40.2	61.0	18	17.0	29	48.5	32.3	16.2	30.0	6	5.0	12
York,*	York,	385	30.050	30.330	29.745	43.2	68.0	8	19.0	29	53.5	32.9	20.6	35.0	6	7.5	1

* Observations taken at 8 A. M. and 8 P. M. † Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATIONS.	Relative humidity.	Dew point.	PRECIPITATION. Total inches.	PRECIPITATION. Total snowfall during month.	PRECIPITATION. Number of days rainfall.	NUMBER OF DAYS. Clear.	NUMBER OF DAYS. Fair.	NUMBER OF DAYS. Cloudy.	WIND. PREVAILING DIRECTION. 7 A. M.	WIND. PREVAILING DIRECTION. 2 P. M.	WIND. PREVAILING DIRECTION. 9 P. M.	OBSERVERS.
Allegheny,*	Pittsburgh,	70.4	35.2	1.14	. . . .	13	7	9	14	W	W	W	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	77.0	36.0	1.57	. . . .	5	7	12	11	W	SW	N	Miss E. A. G. Apple.
Blair,†	Altoona,	67.1	36.3	1.07	. . . .	5	. . .	. . .	. . .	. . .	. . .	. . .	Dr. Charles B. Dudley.
Bradford.	Wysox,	80.8	33.2	0.81	. . . .	7	7	4	19	W	W	W	Charles Beecher.
Bucks,	Quakertown,	77.4	33.0	1.24	. . . .	7	10	12	8	W	W	W	J. L. Heacock.
Cambria,*	Johnstown,	84.7	36.2	2.34	1.00	15	5	10	15	S	S	S	E. C. Lorentz.
Cameron.	Emporium,	. . .	. . .	2.16	1.50	11	7	12	11	NW	W	W	T. B. Lloyd.
Carbon,*	Mauch Chunk,	. . .	. . .	1.00	0.20	6	12	11	7	NW	NW	NW	John J. Boyd.
Centre,	State College— Agricultural Experiment Station,	74.9	33.2	1.46	0.60	9	6	8	16	W	W	W	Prof. Wm. Frear.
Chester.	West Chester.	69.0	34.0	1.23	. . . .	8	10	9	5	NW	NW	S	Jesse C. Green, D. D. S.
Clarion,	Clarion— State Normal School,	82.0	36.0	1.77	. . . .	4	3	7	17	SW	SW	SW	C. M. Thomas, B. S.
Clearfield,	Grampian Hills,	. . .	. . .	1.96	3.50	10	7	6	17	W	W	W	Nathan Moore.
Clinton.	Lock Haven,	. . .	. . .	1.35	0.50	10	8	11	11	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa,	. . .	. . .	1.17	0.50	6	. . .	. . .	. . .	. . .	. . .	. . .	Robert M. Graham.
Crawford,	Meadville,	83.0	33.5	2.81	1.00	10	7	6	17	W	S	N	J. & B. H. Metcalf.
Cumberland,	Carlisle,	84.9	37.4	0.81	. . . .	7	8	12	10	W	W	W	J. E. Pague.
Dauphin.*	Harrisburg,	72.2	33.8	1.12	. . . .	8	11	9	10	W	W	W	Frank Ridgway, Sgt. Sig. Corps.
Delaware,	Swarthmore— Swarthmore College,	77.9	36.7	0.88	0.10	4	1	13	16	W	W	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	72.0	33.0	3.32	. . . .	13	5	8	17	SW	SW	SW	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	. . .	. . .	2.25	. . . .	7	13	12	5	NW	SW	SW	Wm. Hunt.
Franklin,	Chambersburg— Wilson Female College,	81.2	33.4	1.21	. . . .	4	11	10	9	. . .	. . .	. . .	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	76.8	35.8	1.50	. . . .	3	12	11	7	N	NW	N	Thomas F. Sloan.
Huntingdon,*	Huntingdon— The Normal College,	. . .	. . .	1.38	. .	5	20	3	7	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana— State Normal School,	79.5	35.5	2.14	1.00	7	7	8	11	NW	NW	NW	Prof. S. C. Schmucker.
Lancaster.	Lancaster,	78.2	39.7	1.04	. . . .	4	8	15	7	NW	NW	W	Lewis T. Lampe.
Lawrence.	New Castle,	91.7	38.7	2.44	0.25	9	6	5	18	NW	NW	SE	Wm. T. Butz.
Lebanon,	Myerstown,	83.1	36.4	1.23	. . . .	4	13	6	11	W	W	W	Wm. H. Kline.
Lehigh,	Coopersburg.	. . .	. . .	0.95	. . . .	6	11	11	8	SE	NW	SE	M. H. Boye.

Luzerne,	Drifton— Drifton Hospital,				....								H. D. Miller, M.D.
Lycoming,*	Nisbet,			.30	....	5				W		E	John S. Gibson, P.M.
Mercer,*	Greenville— Thiel College,	88.8	34.9	2.92	2.00	12	5		17	SE	.	NW	Prof. S. H. Miller.
Mifflin,	Pottstown,	77.0	36.0	1.00	....	3	20		2	W	W	W	Charles Moore, D.D.S.
Northampton,	Bethlehem,	73.0	35.0	0.82	....	2	20			W	W	W	Lerch & Rice.
Philadelphia,*	Philadelphia— Signal Office,	70.	34.4	0.80	....	7	10	13	7	NW	NW	NW	Luther M. Dey, Sgt. Sig. Corps.
Schuylkill,	Girardville,			1.67	1.00	8	11	10	9	W	W	W	E. C. Wagner.
Snyder,	Selinsgrove,	84.6	36.5	1.54	....	5		16	10	SW	NW	NW	J. M. Boyer.
Somerset,	Somerset,	85.1	37.2	3.00	1.25	9		5	17	NW	NW	NW	W. M. Schrock.
Sullivan,	Eagles Mere,	74.5	27.1	1.64	2.00	3		16	9	SW	SW	SW	E. S. Chase.
Tioga,	Wellsboro',	78.2	48.6	0.93	1.50	10	2	10	18	S	SW	N	H. D. Deming.
Union,*	Lewisburg,	...	...	1.21	....	9	10	11	9	SW	SW	SW	F. O. Whitman.
Warren,	Columbus,	67.4	27.8	4.29	3.00	16	6	7	17	SW	SW	SW	Wm. Loveland.
Washington,	Canonsburg,	70.4	32.6	1.91	....	10		12	9	W	W	W	A. L. Runion, M.D.
Wayne,	Honesdale,	66.4	31.9	1.10	....	11	...	...	...	...	...	...	John Torrey.
Westmoreland,	Ligonier,	74.0	36.0	2.13	....	7	13	2	15	...	...	...	J. T. Ambrose.
Wyoming,*	South Eaton,	...	...	0.78	....	5	6	8	16	NW	NW	NW	Benj. M. Hall.
York,*	York,	82.2	36.0	0.80	....	6	19	2	9	NW	NW	NW	Mrs. L. H. Grenewald.

*Observations taken at 8 A. M. and 8 P. M. †Observations taken at 12 noon.

PRECIPITATION FOR NOVEMBER, 1890.

	Altoona.	Bethlehem.	Blue Knob.	Browers Lock.	Canonsburg.	Carlisle.	Catawissa.	Chambersburg.	Charlesville.	Clarion.	Coatesville.	Columbus.	Coopersburg.	Doylestown.	Drifton.	Dyberry.	Eagles Mere.	Emporium.	Erie.	Forks of Neshaminy.	Frederick.	Germantown.	Girardville.
1.												.10							.14				
2.											.03	.40				.11		.18	.08	.03	.02		.06
3.	.02				.02							.29		.06					.14			.10	
4.			.20		.02		.06			1.08		.09				.03	.16	.13	.39				.04
5.																							
6.																							
7.																							
8.					.40							.20						.04	.86				
9.			.01		.06							.70				.06		.18	.22				
10.			.02		.08							.23						.10	.24				
11.	.35		.05	.56	.15	.05	.21	.58	.21	.54	.35	.02	.42	.42		.27	.32	.10		.42	.50		.37
12.	.29	.52	.04	.06	.84	.19	.34	.37	.35	.10	.12		.09	.11			.26			.07	.06	.54	.28
13.			.01			.04			.02		.09		.01							.03	.03	.10	
14.												.14											
15.										*						.15			.05				
16.					.17	.03			.01	*						.26		.14		.02			
17.	.35	.30	.05	.31	.10	.40	.48	.18	.28	*	.40	1.55	.40	.46		.60	.84	.86	1.12	.33	.50	.35	.70
18.	.06		.05			.06		.08		.05	.02	.17	.02					.12	.02	.03	.02	.03	.10
19.							.03					.18	.01			.10		.19	.04				.06
20.			.25	.03	.07	.04	.05				.05	.10					.06	.12		.01	.03	.03	.06
21.																							
22.																							
23.																.10							
24.																							
25.											.01	.05		.04						.01			
26.																							
27.			.10									.06							.01				
28.																							
29.																							
30.												.01							.01				
31.																							
	1.07	0.82	0.78	0.96	1.91	0.81	1.17	1.21	1.57	1.77	1.07	4.29	0.95	1.09	. . .	1.68	1.64	2.16	3.32	0.95	1.16	1.15	1.67

* No record.

PRECIPITATION FOR NOVEMBER, 1890—*Continued.*

	Grampian Hills.	Greenville.	Hamburg.	Harrisburg.	Hollidaysburg.	Honesdale.	Huntingdon.	Indiana.	Johnstown.	Kennett Square.	Lancaster.	Lansdale.	Le Roy.	Lewisburg.	Ligonier.	Lock Haven.	Mauch Chunk.	Meadville.	McConnellsburg.	Myerstown.	New Castle.	Nisbet.	Ottsville.
1.								*					.02			.01							
2.	.24	.24		.01	.01	.11	.01	*	.05				.05					.59			.17		
3.	.04	.08			.03		.01		.02	.08		.06						.05			.06		
4.	.10	.08			.01	.02			.10				.04	.01	.10	.01		.02					.02
5.																							
6.																							
7.																							
8.		.33						*	.01				.08		.05		*	.06			.30		
9.		.50						*										.65			.45		
10.	.10	.33				.04		.25	.18				.09		.19			.12			.07		
11.	.15	.02	.44	.46	.45	.30	.45	.25	.51	.28	.50	.40	.17	.10	.60	.25	.28		.89	.52		.30	.47
12.	.27		.08	.22	.35	.04	.23	.25	.35	.18	.22	.12	.02	.10	.35	.15	.15		.42	.08	.14	.20	.07
13.				.02				.35			.06			.40									
14.				.02																			
15.		.07	.01			.02			.05				.05	.10		.01	.01	.03			.09		
16.		.05		.05					.03							.17		.11				.10	
17.	.87	1.03	.35	.32	.48	.44	.68	.64	.73	.20	.26	.55	.17	.50	.65	.53	.45	1.16	.28	.59	1.12	.50	.44
18.		.08		.02	.05	.07		.30	.21	.05			.07		.19	.15	.07			.04		.20	.07
19.	.05					.11			.01				.02			.06							
20.	.09				.10	.01		.10	.06				.08			.01	.04						
21.																							
22.																							
23.						.02							.03										
24.																							
25.										.04		.04											
26.																							
27.	.05	.11							.02									.02			.04		
28.																							
29.																							
30.									.01														
31.																							
	1.96	2.92	0.87	1.12	1.48	1.18	1.38	2.14	2.34	0.83	1.04	1.17	0.89	1.21	2.13	1.35	1.00	2.81	1.59	1.23	2.44	1.30	1.07

* No record.

PRECIPITATION FOR NOVEMBER, 1890—*Continued.*

	Petersburg.	Philadelphia.	Phillipsburg.	Phœnixville.	Pittsburgh.	Point Pleasant.	Pottstown.	Quakertown.	Reading.	Selsholtzville.	Selinsgrove.	Smith's Corner.	Somerset.	South Eaton.	State College.	Swarthmore.	Tipton.	Uniontown.	Wellsboro'.	West Chester.	Westtown.	Wilkes-Barre.	Wysox.	York.
1.																								
2.				.02	.04			.03	.01				.15	.02	.04			.08	.06	.06	.06	.05	.03	
3.		.02	.05	.02	.01							.04								.07		.05		
4.	.05		.02		.02				.01				.10		.05		.02							
5.			.03																					
6.																								
7.																								
8.				.02	.04																			
9.					.01																		.18	
10.					.15						.25		.20		.01			.43				.05	.06	
11.	.50	.36		.59	.12	.42	.52	.52	.40	.40	.27	.43	1.20	.31	.32	.45	.45	.68	.05	.47	.44	.41		.38
12.	.24	.03	.35	.17	.12	.07	.08	.04	.12	.12	.31	.06	.50	.05	.37		.45	.52		.12	.17	.18		.15
13.		.09		.03				.06	.03							.10				.09				.08
14.																								
15.					.02				.01									.10	.05				.13	
16.		.01	.03	.01	.18								.20				.02					.05	.07	.01
17.	.42	.22	.43	.26	.24	.43	.40	.49	.25	.52	.65	.40	.45	.28	.48		.43	.39	.20	.37	.29	.31	.31	.13
18.	.17	.02		.02	.09	.03		.09	.03			.05	.10	.12	.13	.31	.20		.42	.03		.15		
19.								.01	.01				.10						.05			.03	.03	
20.			.35	.08	.10				.01	.04	.06				.06	.02			.10					.06
21.																								
22.																								
23.																						.01		
24.			*																					
25.			*																	.02				
26.			*																		.01			
27.			*															.05						
28.			*																					
29.			*																					
30.			*	*																				
31.																								
	1.38	0.80	1.27	1.22	1.14	0.95	1.00	1.24	0.88	1.08	1.54	0.98	3.00	0.78	1.46	0.88	1.57	2.25	0.98	1.23	0.97	1.29	0.81	0.80

* No record.

FOR DECEMBER, 1890.

TEMPERATURE.

The mean temperature of 55 stations for December, 1890, was 27°.5, which is over 2°.0 below the normal, and 11°.8 below the corresponding month of 1889.

The mean of the daily maxima and minima temperatures 35°.0 and 19°.4 give an average daily range of 15°.6, and a monthly mean of 27°.2.

Highest monthly mean, 33°.1 at Uniontown.

Lowest monthly mean, 20°.6 at Dyberry.

Highest temperature recorded during the month, 59°.0 on the 11th at Charlesville.

Lowest temperature, minus 11°.0 on the 29th at Dyberry.

Greatest local monthly range, 25°.2 at Wilkes-Barre.

Least local monthly range, 11°.1 at Grampian Hills.

Greatest daily range, 40° at Somerset on the 20th and Honesdale on the 29th.

Least daily range, 1° at Catawissa and Petersburg on the 7th.

From January 1, 1890, to December 31, 1890, the excess in temperature at Philadelphia was 682°, at Erie 47° and at Pittsburgh, 752°.

The coldest period of the month was on the 20th and 31st.

BAROMETER.

The mean pressure for the month, 30.09, is about .03 above the normal. At the U. S. Signal Service Stations, the highest observed was 30.62 at Harrisburg and Philadelphia on the 20th, and the lowest 29.42 at Philadelphia on the 17th.

PRECIPITATION.

The average precipitation 3.97 inches for the month, is an excess of 1.00 inch.

It was largely composed of snow.

The largest totals in inches were Blue Knob, 9.68, Eagles Mere, 7.02; Uniontown, 6.84; Indiana, 6.51; Phillipsburg, 5.94; Le Roy, 5.78; Hollidaysburg, 5.71; Pittsburgh, 5.64; Somerset, 5.52, and Dyberry, 5.29.

The least were Erie, 1.72; New Castle, 2.13; Columbus, 2.16; and Philadelphia, 2.33.

The following are the largest totals of snow fall reported: Blue Knob, 96 inches; Eagles Mere, 65 inches; Somerset, 60 inches; Le Roy, 57 inches; Indiana, 50 inches; and Wellsboro', 49 inches.

The heaviest snows occurred on the 17th and 29th. A considerable quantity remained on the ground at the end of the month.

WIND AND WEATHER.

The prevailing wind was from the northwest. The storms of the 17th and 26th were quite heavy. Considerable damage was done by wind, and travel in some parts of the state was delayed by snow drifts.

A large storage of ice was harvested during the month.

Average number: Rainy days, 12; clear days, 7; fair days, 8; cloudy days, 16.

Errata: Coopersburg mean temperature for October should be 51.3 instead of 53.3.

MONTHLY SUMMARY OF REPORTS *by Voluntary Observers of the Pennsylvania State Weather Service for December 1890.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE.											
							MAXIMUM.		MINIMUM.		Mean of maximum.	Mean of minimum.	DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date.	Lowest.	Date.			Mean.	Greatest.	Date.	Least.	Date.
Allegheny,*	Pittsburgh,	847	30.120	30.540	29.630	32.1	52	11	16	20	37.8	26.4	11.4	28.0	20	4.0	25
Bedford,	Charlesville,	1,300	. . . .	. . . .	. . . .	27.4	59	11	—5	20	36.5	17.5	19.0	38.0	30	4.0	17
Blair,†	Altoona (30 days),	1,181	. . . .	. . . .	. . . .	34.5	56	12	14	20	42.5	26.4	16.1	29.0	12	8.0	11
Blair,	Blue Knob,	2.500	. . . .	. . . .	. . . .	28.4	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Bradford,	Wysox,	718	30.110	30.602	29.754	23.7	42	21, 23	—9	20	30.3	14.0	16.3	36.5	29	5.0	18
Bucks,	Quakertown,	536	30.090	30.620	29.530	27.0	52	11	5	31	36.5	17.6	18.9	28.3	29	8.2	18
Cambria,*	Johnstown,	1,184	30.160	30.610	29.650	29.9	51	11	7	20	37.9	21.9	16.0	28.0	20	5.0	17
Cameron,	Emporium,	1,030	. . . .	. . . .	. . . .	27.4	48	11	9	20	35.2	15.3	19.9	33.0	20	6.0	17
Carbon,*	Mauch Chunk (29 days),	550	. . . .	. . . .	. . . .	27.1	48	23	4	29	36.0	18.2	17.8	31.0	29	9.0	27
Centre,	State College— Agricultural Experiment Station,	1,191	30.059	30.611	29.510	25.9	43	11	1	20	32.3	17.5	14.8	29.0	21	4.0	17
Chester,	West Chester,	455	30.047	30.555	29.394	29.9	51	23	14	26	37.1	22.9	14.2	21.5	3	5.0	8
Clarion,	Clarion— State Normal School,	1,530	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Clearfield,	Grampian Hills,	1,450	. . . .	. . . .	. . . .	24.0	44	11	0	20	29.6	18.5	11.1	28.0	20	4.0	18
Clinton,	Lock Haven,	560	. . . .	. . . .	. . . .	26.6	50	11	0	20	32.2	17.3	14.9	28.0	31	6.0	18
Columbia,	Catawissa (28 days),	491	. . . .	. . . .	. . . .	28.5	45	11	10	2, 20	33.1	21.8	11.3	20.0	23	1.0	7
Crawford,	Meadville,	1,300	30.110	30.590	29.550	26.5	43	22	8	20, 30	32.4	19.5	12.9	33.0	20	6.0	21
Cumberland,	Carlisle,	480	. . . .	. . . .	. . . .	28.6	56	11	8	30, 31	35.6	20.3	15.3	26.0	30	5.0	1
Dauphin,*	Harrisburg,	361	30.072	30.618	29.526	29.2	55	11	14	26, 31	35.3	23.6	11.7	23.0	11	4.0	24
Delaware,	Swarthmore, Swarthmore College,	190	30.035	30.540	29.578	30.7	51	23	15	2	38.2	25.2	13.0	27.5	14	2.0	8
Erie,*	Erie,	681	30.050	30.550	29.510	29.0	51	22	9	28	36.0	22.0	14.0	26.0	20	5.0	19
Fayette,	Uniontown,	1,000	30.047	30.426	29.552	33.1	53	11, 24	9	20	39.2	26.3	12.9	35.0	20	1.0	21
Franklin,*	Chambersburg— Wilson Female College (28 days),	618	30.129	30.529	29.663	27.6	58	11	5	30	37.3	18.0	19.3	35.0	11	4.0	7
Fulton,	McConnellsburg,	875	. . . .	. . . .	. . . .	29.4	58	11	6	28, 29	38.6	20.3	18.3	32.0	29	5.0	17
Huntingdon,*	Huntingdon— The Normal College,	650	. . . .	. . . .	. . . .	28.9	52	11	5	20	37.3	20.5	16.8	30.0	21	4.0	17
Indiana,	Indiana— State Normal School,	1,350	30.096	30.382	29.636	27.4	47	11	7	28	33.9	18.8	15.1	31.0	20	5.0	12
Lancaster,	Lancaster (18 days),	413	30.070	30.553	29.616	31.4	56	11	9	3	41.1	22.5	18.6	30.5	14	8.5	18
Lawrence,	New Castle,	932	. . . .	. . . .	. . . .	29.8	45	11, 23	2	20	35.3	18.6	16.7	38.0	20	7.0	18
Lebanon,	Myerstown (30 days),	474	30.082	30.502	29.596	28.2	52	11	1	2	37.7	18.8	18.9	27.8	2	7.5	18
Lehigh,	Coopersburg,	520	. . . .	. . . .	. . . .	28.2	53	11	11	30	39.0	21.1	17.9	29.0	20	9.0	18

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Elevation above sea level (feet).	BAROMETER REDUCED TO SEA LEVEL.			TEMPERATURE											
							MAXIMUM.		MINIMUM.				DAILY RANGE.				
			Mean.	Highest.	Lowest.	Mean.	Highest.	Date	Lowest.	Date.	Mean of maximum.	Mean of minimum.	Mean.	Greatest.	Date.	Least.	Date.
Luzerne,	Drifton— Drifton Hospital,	1,655	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lycoming,*	Nisbet,	550	...	...	...	26.1	...	...	...	...	...	...	...	...	...	...	...
McKean,	Smethport (30 days),	1,500	...	...	...	24.5	44	11	—7	8, 20	32.0	15.1	16.9	33.0	20	8.0	17
Mercer,*	Greenville— Thiel College.	1,000	30.053	30.601	29.530	26.6	50	31	1	30	34.6	18.9	15.7	37.7	30	5.0	1
Mifflin.	Pottstown,	150	...	...	...	29.7	53	11	12	2	37.3	23.8	13.5	24.0	11	5.0	8
Northampton,	Bethlehem,	360	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Philadelphia,*	Philadelphia— Signal Office,	117	30.098	30.620	29.420	32.2	52	12	17	26	38.3	26.0	12.3	26.9	3	5.0	28
Schuylkill,	Girardville,	1,000	30.061	30.452	29.617	27.5	46	11	10	2	35.6	20.2	15.4	27.0	23	8.0	18
Snyder,	Selinsgrove (28 days),	445	...	...	...	28.2	47	15	6	20	35.9	20.5	15.4	...	...	...	...
Somerset,	Somerset,	2,250	...	...	...	26.8	50	11	1	20	33.2	16.7	16.5	40.0	20	6.0	17
Sullivan,	Eagles Mere,	2,060	30.139	30.686	29.7[illegible]0	22.1	38	23, 24, 25	—4	13	27.7	16.2	11.5	20.0	21	4.0	31
Tioga,	Wellsboro',	1,327	30.070	30.649	29.549	22.2	45	11	—10	20	30.1	15.3	14.8	24.0	9	2.0	17
Union,*	Lewisburg,	450	...	...	...	27.8	48	11	6	31	36.3	19.4	16.9	30.0	21	8.0	17
Warren,	Columbus,	1,410	...	...	...	24.2	44	20, 22	—4	30	31.3	17.1	14.2	44.0	20	2.0	4
Washington,	Canonsburg,	950	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wayne,	Honesdale,	1,000	...	...	...	22.1	45	11	—9	20	29.9	14.3	15.6	40.0	29	4.0	22
Westmoreland,	Ligonier (27 days),	1,750	...	...	...	29.9	52	11	4	20	35.6	18.8	16.8	36.0	30	6.0	1
Wyoming,*	South Eaton,	660	...	...	...	25.6	47	11	—3	28, 29	34.3	16.9	17.4	35.0	29	4.0	13
York,*	York,	385	30.036	30 431	29.547	29.8	56	11	6	30	38.6	21.0	17.6	28.0	14	7.5	17

* Observations taken at 8 A. M. and 8 P. M.

† Observations taken at 12 noon.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.				NUMBER OF DAYS.			WIND.			OBSERVERS.
											PREVAILING DIRECTION.			
				Total inches.	Total snowfall during month.	Depth of snow on ground at end of month.	Number of days rainfall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Allegheny,*	Pittsburgh,	76.8	25.2	5.64	41.30	....	18	4	8	19	W	W	W	Oscar D. Stewart, Sgt. Sig. Corps.
Bedford,	Charlesville,	79.0	21.5	3.83	35.50	14.00	12	6	12	13	N	SW	N	Miss E. A. G. Apple.
Blair,†	Altoona (26 days),	70.7	26.0	3.80	....	....	13	...	...	...	...	...	...	Dr. Charles B. Dudley.
Blair,	Blue Knob,	...	...	9.68	96.50	36.50	17	6	7	18	NW	NW	NW	A. H. Boyle.
Bradford,	Wysox,	76.7	17.6	3.48	29.50	24.00	11	8	2	21	NW	NW	NW	Charles Beecher.
Bucks,	Quakertown,	76.6	20.6	3.21	8.60	6.00	11	7	13	11	NE	NW	NW	J. L. Heacock.
Cambria,*	Johnstown,	83.3	23.9	4.89	42.00	16.00	19	5	8	18	S	S	S	E. C. Lorentz.
Cameron,	Emporium,	...	...	3.21	31.25	6.00	9	5	5	21	NW	NW	W	T. B. Lloyd.
Carbon,*	Mauch Chunk (29 days),	...	...	3.18	....	....	7	10	11	10	NW	NW	NW	John J. Boyd.
Centre,	State College—													
	Agricultural Experiment Station,	86.7	21.8	3.19	32.65	11.00	11	3	11	17	W	W	W	Prof. Wm. Frear.
Chester,	West Chester,	68.0	21.0	3.94	11.00	3.00	13	14	5	12	NW	NW	NW	Jesse C. Green, D.D.S.
Clarion,	Clarion—													
	State Normal School,	...	...	...	....	....	...	...	...	...	...	...	...	C. M. Thomas, B.S.
Clearfield,	Grampian Hills,	...	...	4.28	43.00	24.00	14	4	10	17	W	W	W	Nathan Moore.
Clinton,	Lock Haven,	...	...	4.43	42.80	16.00	14	6	3	22	W	W	W	Prof. John A. Robb.
Columbia,	Catawissa (28 days),	...	...	4.10	32.00	12.00	10	...	...	...	...	...	...	Robert M. Graham.
Crawford,	Meadville,	84.0	21.3	3.10	29.25	6.00	14	3	11	17	S	S	W	J. & B. H. Metcalf.
Cumberland,	Carlisle,	86.0	24.0	4.20	23.00	10.00	15	7	15	9	N	W	NW	J. E. Pague.
Dauphin,*	Harrisburg,	77.8	22.8	2.42	15.00	7.00	12	10	8	13	W	W	W	Frank Ridgway, Sgt. Sig. Corps
Delaware,	Swarthmore—													
	Swarthmore College,	81.0	25.0	4.49	8.50	8.00	6	3	12	16	N	NW	NW	Prof. Susan J. Cunningham.
Erie,*	Erie,	76.0	21.0	1.72	....	....	18	3	4	24	SW	SW	SW	Peter Wood, Sgt. Sig. Corps.
Fayette,	Uniontown,	...	...	6.84	24.50	....	18	9	11	11	W	W	W	Wm. Hunt.
Franklin,*	Chambersburg—													
	Wilson Female College (28 days),	85.9	23.3	...	....	....	...	...	...	...	...	...	...	Miss Mary A. Ricker.
Fulton,	McConnellsburg,	75.8	26.4	3.30	26.00	12.00	5	13	8	10	N	W	N	Thomas F. Sloan.
Huntingdon,*	Huntingdon—													
	The Normal College,	...	...	3.35	33.50	12.00	5	7	10	14	W	W	W	Prof. W. J. Swigart.
Indiana,	Indiana—													
	State Normal School,	85.8	24.0	6.51	49.75	14.00	7	6	6	19	NW	SW	NW	Prof. S. C. Schmucker.
Lancaster,	Lancaster (18 days),	77.6	28.6	1.08	....	....	5	2	10	6	NW	NW	NW	Lewis T. Lampe.
Lawrence,	New Castle,	87.8	27.4	2.13	16.95	....	11	4	9	18	NW	NW	NW	Wm. T. Butz.
Lebanon,	Myerstown (30 days),	80.5	22.0	3.98	14.00	5.00	11	12	2	17	W	W	W	Wm. H. Kline.
Lehigh,	Coopersburg,	...	...	3.76	9.60	4.00	14	13	4	14	NW	SW	NW	M. H. Boyle.

MONTHLY SUMMARY OF REPORTS—*Continued.*

COUNTY.	STATION.	Relative humidity.	Dew point.	PRECIPITATION.				NUMBER OF DAYS.			WIND. PREVAILING DIRECTION.			OBSERVERS.
				Total inches.	Total snowfall during month.	Depth of snow on ground at end of month.	Number of days rainfall.	Clear.	Fair.	Cloudy.	7 A. M.	2 P. M.	9 P. M.	
Luzerne,	Drifton—Drifton Hospital,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	H. D. Miller, M.D.
Lycoming,*	Nisbet,	. . .	. . .	4.45	33.00	21.00	10	11	. . .	20	. . .	. . .	. . .	John S. Gibson, P. M.
McKean,	Smethport (30 days),	. . .	. . .	. . .	31.50	. . .	. . .	6	5	19	SW	SW	SW	Armstrong & Brownell.
Mercer,*	Greenville—Thiel College,	92.3	22.8	2.68	24.50	3.00	18	4	3	24	S	S	S	Prof. S. H. Miller.
Mifflin,	Pottstown,	75.0	23.0	2.86	9.50	3.00	6	16	5	10	W	W	W	Charles Moore, D.D.S.
Northampton,	Bethlehem,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	Lerch & Rice.
Philadelphia,*	Philadelphia—Signal Office,	69.0	22.0	2.33	6.05	2.60	13	9	7	15	NW	NW	NW	Luther M. Dey, Sgt. Sig. Corps.
Schuylkill,	Girardville,	. . .	. . .	4.65	23.75	18.00	13	11	12	8	W	W	W	E. C. Wagner.
Snyder,	Selinsgrove (28 days),	80.9	24.8	4.38	21.00	5.75	7	2	18	8	NW	NW	NW	J. M. Boyer.
Somerset,	Somerset,	81.1	21.1	5.52	60.00	36.00	15	. . .	12	19	NW	NW	NW	W. M. Schrock.
Sullivan,	Eagles Mere,	73.1	15.0	7.02	65.29	39.00	13	7	7	17	SW	SW	SW	E. S. Chase.
Tioga,	Wellsboro',	80.6	17.5	4.97	48.85	36.25	13	1	5	25	NW	NW	NW	H. C. Deming.
Union,*	Lewisburg,	. . .	. . .	2.99	22.90	6.00	2	9	11	11	SW	SW	SW	F. O. Whitman.
Warren,	Columbus,	68.0	15.0	2.16	. . .	12.00	16	2	6	23	SW	SW	SW	Wm. Loveland.
Washington,	Canonsburg,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	A. L. Runion, M.D.
Wayne,	Honesdale,	. . .	. . .	4.01	20.00	14.00	11	. . .	. . .	. . .	. . .	. . .	. . .	John Torrey.
Westmoreland,	Ligonier (27 days),	. . .	. . .	3.69	22.30	. . .	8	9	4	18	. . .	. . .	. . .	J. T. Ambrose.
Wyoming,	South Eaton,	. . .	. . .	3.31	14.00	15.00	13	4	9	18	NW	NW	NW	Benj. M. Hall.
York,*	York,	85.2	23.9	3.29	18.50	5.00	10	16	3	12	NW	NW	NW	Mrs. L. H. Grenewald.

*Observations taken at 8 A. M. and 8 P. M. †Observations taken at 12 noon.

PRECIPITATION FOR DECEMBER, 1890.

	Altoona.	Bethlehem.	Blue Knob.	Bowers Lock.	Canonsburg.	Carlisle.	Catawissa.	Chambersburg.	Charlesville	Clarion.	Coatesville.	Columbus.	Coopersburg.	Doylestown.	Drifton.	Dyberry.	Eagles Mere.	Emporium.	Erie.	Forks of Neshaminy.	Frederick.	Germantown.	Girardville.	Grampian Hills.
1.			.45			.03	.20		.09		.10	.10	.10				.21	.15	.03	.23	.08		.16	.21
2.	.17			.09		.25					.01	.05	.01	.14			.35		.07		.02			
3.	.07		.40	.48		.05	.09		.09		.35	.32	.60	.27		.50	.42	.75	.50	.34	.17	.40	.35	.66
4.	.16		.30			.08			.05		.08	.14	.18	.30		.20		.08	.07	.31	.16	.18		
5.	.10		.10									.13				.14	.02	.18	.13					.06
6.			.03	.14		.01	.28		.04		.24		.02	.15		.32	.11			.11	.13	.13	.06	.10
7.	*					.05							.05						.01	.02	.04			
8.	.13		.40	.03		.10	.15		.35		.08	.03	.04	.12			.06	.14		.01	.06		.06	.13
9.	.02					.02																		
10.							.02				.02									.01			.11	
11.																								
12.			.20									.12	.01			.19	.20		.08					.05
13.			.20									.06							.04					
14.																			.01					
15.																								
16.			.15						.15		.05								.03				.13	
17.	1.72		2.25	.99		1.50	1.50		1.70		1.34	.13	1.76	1.27		1.70	1.13	.97	.06	1.00	1.10	.60	1.03	1.13
18.	.80		1.20			.50			.20		.10		.06			.24	2.04	.40	.01	.05	.08	.10	.84	.75
19.																								
20.																								
21.			.10	.05		.07	.16		.03		.03	.44	.05			.28	.06	.25	.11	.06	.07		.12	.30
22.	.03					.02								.08						.03				
23.																								
24.												.01												.02
25.			.05						.25															
26.	.60		2.00	.55		1.40	1.00		.85		.91	.14	.80	.90		1.45	1.20	.29	.11	.29	.52	1.00	1.13	.48
27.	.02		.60			.04	.40					.12	.02				.88		.13				.36	.12
28.	.01		.30									.06							.02					
29.	.06		1.00	.04		.08	.30				.10	.02	.06	.15			.34		.11	.05	.06		.22	.13
30.																.27								
31.			.04						.03			.29							.20				.08	.14
	3.80	. . .	9.68	2.37	. . .	4.20	4.10	. . .	3.83	. . .	3.15	2.16	3.76	3.38	. . .	5.29	7.02	3.21	1.72	2.51	2.44	2.41	4.65	4.28

* No record.

PRECIPITATION FOR DECEMBER, 1890—*Continued.*

	Greenville.	Hamburg.	Harrisburg.	Hollidaysburg.	Honesdale.	Huntingdon.	Indiana.	Johnstown.	Kennett Square.	Lancaster.	Lansdale.	Le Roy.	Lewisburg.	Ligonier.	Lock Haven.	Mauch Chunk.	Meadville.	McConnellsburg.	Myerstown.	New Castle.	Nisbet.	Otts'lle.	Petersburg.
1.	.26	.16	.10	.21		.40	.07	.03			.05	.10	.20	.23	.20	.20	.35	.10	.02		.20	.20	.20
2.	.02		.10				.02								.10		.10		.01	.23			
3.	.34	.25	.10	.23	.60		.15	.49		.08	.09	.66	.20	.23	.30	.08	.10		.49	.38	.30	.25	.16
4.	.08	.15	.02					.04	.33	.02	.05	.01					.35			.06	.20		
5.	.15				.08							.14	.04				20				.05		
6.		.06	.02	.21	.19		.30	.30		.13	.50	.05		.86	.05	.24					.20	.30	.11
7.			.06					.01	.04	.02									.16				
8.	.02		.02	.27		.30	.30	.25	.14		.20	.06			.20			.20	.09	.11		.06	.13
9.					.01								.25							.02	.20		
10.	.02							.01	.35		.03				.10	.02			.01				
11.														.14									
12.	.20			.03			.07	.05				.08					.07			.06			
13.	.01																.05						
14.																							
15.																							
16.	.07			.07			.05	.03							.05		.05						
17.	.14	.70	.80	2.12	1.35	1.30	.60	1.57	1.31	.83	.81	1.80	.80	.60	1.40	.45	.20	1.90	1.68	.31		.80	2.00
18.		.05	.22	.72	.40	.40	1.20	.35	.07		.04	1.80		.60	.73	.06			.04				.40
19.										*				*							2.10		
20.										*													
21.	.44	.12	.10	.08	.17		.70	.19		*	.15	.02	.60		.03	.14	.18		.10	.35		.02	.08
22.										*					.07						.10		
23.										*													
24.	.01							.01		*													
25.				.06				.02		*						*		1.10					
26.	.25	.55	.84	1.35	.99	.95	2.00	.86	1.08	*	.45	.60	.80	.63	1.00		.30		*	.40		.55	.50
27.	11			.05	.02		.60	.31		*		.25		.40	.10		.45		.65	.08	.90		
28.	01						.20	.17		*		.16				1.09	.50			.13			
29.	.10	.17	.04	.11	.12		.05	.10	.05	*		.05	.10		.10		.20		.73				
30.										*											.20	.10	
31.	.45			.20	.08		.20	.13		*													.33
	2.68	2.21	2.42	5.71	4.01	3.35	6.51	4.89	3.37	1.08	2.37	5.78	2.99	3.69	4.43	3.18	3.10	3.30	3.98	2.13	4.43	2.37	3.91

* No record.

PRECIPITATION FOR DECEMBER, 1890—*Continued.*

	Philadelphia.	Phillipsburg.	Phœnixville.	Pittsburgh.	Point Pleasant.	Pottstown.	Quakertown.	Reading.	Seisholtzville.	Selinsgrove.	Smith's Corner.	Somerset.	South Eaton.	State College.	Swarthmore.	Tipton.	Uniontown.	Wellsboro'.	West Chester.	Westtown.	Wilkes-Barre.	Wysox.	York.
1.	.03	.30	.05	.08	.08	.10	.14	.06	.13	*	.08	.15	.01	.26			.11	.15	.07		.05	.09	.20
2.	.03	.30	.10					.02		*	.03	.15			.06			.01	.06	.10		.07	
3.	.29	.10	.32	.33	.42	.36	.54	.13	.40	*	.20	.20	.22	.37	.50		.50	.65	.32	.10	.52	.28	.10
4.	.16	.02	.14	.01	.35		.19	.20	.08		.40	.12	.21						.32	.60		.16	.05
5.		.10		.01										.04				.02					
6.	.07	.10	.15	.18	.17	.18	.15	.13	.10	.01	.15	.15	.05	.04			.77		.17		.13		.05
7.	.02	.02	.03		.04		.04	.05	.03		.07		.02		.13				.04				
8.	.14	.10	.05	.19	.07	.02	.08	.02	.08	.10	.07	.30	.06	.11			.21		.13	.20	.15	.08	.10
9.				.01								.11											
10.		.45	.01					.01		.06									.03				
11.																						.10	
12.				.05								.21	.02					.25			.06		
13.		.05																					
14.																							
15.																							
16.				.04				.01														.07	
17.	.73	2.00	1.11	2.35	1.29	1.10	1.31	1.04	1.12	.60	1.00	1.25	.60	1.31	1.10		.80	1.60	1.55	1.50	1.73	1.41	1.10
18.	.19	.60	.03	.25			.06	.09	.25		.03	.60	1.00	.33	.17		2.15	1.15	.03				.55
19.																							
20.																							
21.	.03	.10	.06	.47			.07	.10	.07		.05	.20	.07	.05				.05	.03		.17		.09
22.		.10						.01															
23.																		.05				.07	
24																							
25.				.10																.80			
26.	.59	1.00	.55	1.00	.77	1.10	.57	.52	.61	1.20	.45	1.20	.97	.61	.51		2.00	.75	1.12		.72	.85	.80
27.		.30		.13				.01		.20		.45	.04	.05			.30	.20			.22		
28.	.01			.05								.21											
29.	.04	.30	.07	.06			.06		.11		.07	.22	.04	.02	.02			.04	.07		.20		.52
30.					.01			.07															
31.				.33						2.21								.05				.30	
	2.33	5.94	2.67	5.64	3.20	2.86	3.21	2.47	2.98	4.38	2.66	5.52	3.31	3.19	2.49	. . .	6.84	4.97	3.94	3.30	3.95	3.48	3.29

* No record.

APPENDIX E.

REPORTS OF CONFERENCES AND CONVENTIONS.

1. **Proceedings of the National Conference of State Boards of Health.**
2. **Proceedings of the Section on State Medicine, American Medical Association, Nashville, Tenn., May 20, 21 and 22, 1890.**
3. **Proceedings of the Tri-State Sanitary Association, held at Wheeling, West Virginia, February 27 and 28, 1890.**
4. **State Sanitary Conference, held at Norristown, May 9 and 10, 1890.**

1. PROCEEDINGS OF THE NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH AT NASHVILLE, TENN., MAY 19-20, 1890.

List of delegates.
Address of the president.
Annual reports.
By what means can a proper comprehension of the principles of hygiene be most effectually promoted?
Yellow fever outbreaks.
Report of the committee on leprosy.
Report of minority committee.
Spread of contagious disease.
Sulphur disinfection.
Blanks for state boards.
How to prevent contamination of potable waters.
Should state boards of health have executive powers?
Preservation of the forests as a natural sanitary need.

The sixth annual meeting of the National Conference of State Boards of Health was held at Nashville, Tenn., May 19th and 20th, 1890. The first day's session was called to order in the State Senate Chamber, at 10 A. M., by the President, Dr. J. N. McCormack, of Bowling Green, Ky.

The roll of states was called by the Secretary, Dr. C. O. Probst, of Ohio, the following delegates responding:

LIST OF DELEGATES.

Alabama, Dr. Jerome Cochran.
Arkansas.
California, Dr. C. A. Ruggles.
Colorado.
Connecticut, Dr. C. A. Lindsley.
Delaware
Florida.
Georgia.
Illinois, Dr. John H. Rauch.
Indiana, Dr. James F. Hibbard.
Iowa.
Kansas, Dr. W. L. Schenck, Dr. H. D. Hill.
Kentucky, Dr. J. N. McCormack, Dr. Pinkney Thompson, Dr. William Bailey, Dr. Geo. Beeler, Dr. I. O. McReynolds.
Louisiana, Dr. L. F. Salomon, Dr. Felix Formento.
Maine.
Maryland.
Massachusetts.
Michigan, Dr. Henry B. Baker.
Minnesota.
Mississippi.
Missouri, Dr. Geo. Homan.
New Hampshire.
New Jersey.
New York.
North Carolina.
Ohio, Dr. C. O. Probst, Dr. Thos. C. Hoover.
Pennsylvania, Dr. Benjamin Lee.
Rhode Island, Dr. Charles H. Fisher.
South Carolina, Dr. A. D. Moore.
Tennessee, Dr. J. Berrien Lindsley, Dr. J. D. Plunket, Dr. F. L. Sims.
Texas, Dr. R. Rutherford.
Virginia.
Vermont, Dr. C. L. Allen.
West Virginia.
Wisconsin, Dr. J. T. Reeve, Dr. B. O. Reynolds.
District of Columbia.
Dominion of Canada.
Province of Ontario, Dr. P. H. Bryce.
Province of Quebec.
Manitoba.

On motion, the reading of the minutes of the preceding annual meeting was dispensed with.

The president delivered the following address:

ADDRESS OF THE PRESIDENT.

Gentlemen of the Conference:

The health officials of this country are to be thanked, and the people at large congratulated, that no epidemic disease has had a widespread prevalence within our domains since the last general meeting of the Conference in the spring of 1888. At the time of that meeting the existence of cholera in southern Europe, and the knowledge that this disease had never before prevailed as an epidemic in Europe without reaching, and more or less desolating, portions of our own country, caused a general and well-grounded apprehension of danger in the minds of both the sanitarians and people of this Union. Coast quarantine defenses were inspected and put in order with a vigilance and confidence hitherto unknown in their history, and no less interest was manifested in putting the cities and towns throughout the country in the best possible sanitary condition. It is believed by many of those best informed that it was largely a result of these precautions, and the care upon the part of our trans-Atlantic shipping and commercial interests necessitated by them, that, for the first time in the history of this plague, it failed to reach our shores when once started upon its westward march.

Threatened similarly upon our south Atlantic and Gulf coast from an invasion of yellow fever with each recurrence of the warm season, our confidence in the modern quarantine defenses at New Orleans, Charleston and Savannah, and especially at the first named port, increases with each year in which they give us immunity from this dread disease. Indeed the quarantine system at New Orleans, devised by our distinguished colleague, Dr. Joseph Holt, seems now to reach almost to perfection in that particular branch of our health service, giving the greatest immunity from contagion furnished by present scientific knowledge, and at the same time interfering to the least possible degree with commerce and trade.

From the inception of modern sanitation in this country, Florida furnished a weak and even broken link in the chain of our coast defenses against exotic plagues, and her officials and people manifested an indifference upon this subject hazardous to their own safety as well as that of the entire country. As a result largely of the bitter experience had with yellow fever in 1888, the Florida State Board of Health was created, and it will be our pleasure to welcome its delegates to the first of our meetings they have had an opportunity to attend. The new State of North Dakota has also recently established a state board of health. The development of this branch of service is almost without parallel in the history of government. The first state board of health was established in 1869, and in the short period that has elapsed since that time thirty-three other state boards have been created, and as the powers and appropriations first granted were judiciously utilized, these have been generally gradually extended by the respective legislatures from year to year. The creation of local boards of health in the various cities, towns and counties, has been equally rapid and extensive, and to-day the official health service of the several states having state boards of health, at least theoretically, reaches to the most remote hamlet. This is equally true of the various Provinces of Canada, whose boards also have membership with us.

Both the state and local services are much more perfect and effective in some states and provinces than in others, and a prominent object of this organization has been, and no doubt will long continue to be, a comparison of views and a discussion of the methods by which the best results may be attained. As the jurisdiction of the boards represented here extends over twenty-eight states and Canada, the importance of, and the necessity for, care in our deliberations can hardly be over-estimated.

The rapid growth of commerce and trade between this country and Cuba and Mexico makes the cultivation of cordial relations between the sanitary authorities of these countries and our own a matter of yearly increasing importance, and I submit for your consideration the expediency and propriety of inviting the authorities of these countries to send delegates to our future meetings. The practical results of a similar invitation to the Provinces of Canada have been advantageous to both us and them, and there are many reasons, chiefly climatic, why such relations with Cuba and Mexico are even more important to us.

So far as can be learned, our system of interstate notification in regard to the existence of diseases dangerous to the public health has been very generally and satisfactorily observed. A recent experience had in the working of this system has convinced me that the information imparted by such notices may lead to injustice and misunderstanding between the authorities of adjoining states, without the exercise of constant care and good judgment.

In conclusion, permit me to thank you for the distinguished honor you have conferred upon me by electing and continuing me as your presiding officer for five successive years. As there are many among you more entitled to this honor by years, by experience, as well as by eminence attained in the high calling in which we are all engaged, I shall expect you to select some one else to preside over your deliberations at future meetings.

ANNUAL REPORTS.

The first order of business was the consideration of a question proposed by the State Board of Michigan as to "The editing and printing of annual reports of state boards of health, and other methods of disseminating public health knowledge."

The discussion was opened by Dr. Henry B. Baker, secretary State Board of Health of Michigan, who spoke as follows:

"This question was designed, I think, to bring to us in Michigan all the good advice that you had to offer on this very important topic, and the law in our state makes this 'disseminating of public health knowledge' a very important part of the work of the state board of health. But inasmuch as good advice is included among the things which 'it is more blessed to give than to receive,' I may give you all I can think of on this subject. The first that occurs to me is the desirability of having the 'running head' at the top of every right hand page state the substance of the most important contents of that page.

Life is too short to make it profitable for most busy persons to work long to learn the contents of an official report. Every method which facilitates rapidity of learning the contents of the annual report, not only the titles of the papers, but the substance of them, seems to me very desirable. And the placing at the head of every other page the most important subject discussed on that page, is an important aid. The printers like to set up one line and repeat that on every page; but that does not make a report nearly so valuable as the method I recommend.

Secondly. I like the plan of having in every article which will admit of it, *sub-heads* at the commencement of each division of the subject of the paper.

Thirdly. In Michigan we have had considerable success in disseminating information useful in public health work, and especially in creating an interest in such work by holding sanitary conventions in cities and villages, at which conventions subjects are discussed of special interest, in a sanitary way, to the locality where the convention is held. We hold from two to six each year, and find great good to come from this method of work.

Fourthly. The public press sometimes greatly aids our work in disseminating public health knowledge. I think I can state the exact conditions under which the press aids us most; it is when we take the most care to *condense* facts of interest to the people into a short paragraph, which every newspaper has room for, and which most people will read because it is so short that it is about as easy to read it after the eye has once rested upon it as it is to skip it. I have in mind two or three such items that have gone through nearly every newspaper in our state, because much time and thought were given to the subject of condensing into a single paragraph the important point which it was desirable that our people should grasp.

Fifthly. We think our people derive great benefit from a method we employ for the dissemination of information useful for the restriction of the dangerous communicable diseases. We send to every locality where one of these diseases occurs a number of copies of a pamphlet which gives concisely the best that is known for the restriction of that particular disease, and we ask the health officer to distribute these pamphlets to the neighbors of the family in which the disease is. They are read by neighbors of a placarded house more thoroughly than by any other class of people, and the people thus learn how to restrict that disease."

The discussion was continued by Dr. C. A. Lindsley, secretary State Board of Health of Connecticut, who stated that he had not expected, until a very few days before the meeting of the Conference, to be present, and had not fully studied the question, having made only limited preparation on the cars as he came to Nashville.

"As the subject presents itself to my mind," said he, "I don't propose to treat it in detail, as has already been very ably done, but will only consider it in a general way. It seems to me that there are two features which stand out prominently as important characteristics of an annual report of a state board of health. The first is implied in the words: An account of, narrative or statement of, what has been done by the board during the year that has passed, with the influences which have in any way affected the health of the people of the state. The second feature is as a medium or vehicle by which communication may be had in the way of imparting information and instruction in regard to matters of health.

In reference to the first point there can be no question that the report should present primarily a history of the health of the state, of the diseases which have prevailed during the year, of the epidemics which have occurred, with the places at which they have occurred, of the means which have been taken to restrict or prevent them, and of the success or failure of those methods, of the special character and type of the epidemics, of the conditions which have existed to favor or retard the spread of epidemics in certain localities, of sanitary works which have given practical results, of such undertakings on the part of the state and local boards as affect the condition of the public health. The annual report should clearly and definitely point these out and indicate the hygienic principles upon which certain sanitary conditions are possible. By this I do not mean that it is the function of the state board of health to devise detailed methods of relief, but it should set forth the principles upon which such relief is to be based, leaving it to sanitary engineers to go into detail. The annual report should obviously take account of all public enterprises and undertakings in the state in the interest of preventive medicine, as the drainage of wet lands, the sewerage of towns and cities, the introduction of water supplies to communities and cities. Where the results of these undertakings are obvious, and can be accurately determined, they should be published in the annual report as so many object lessons for the instruction of the people. Questions of public sanitation should be included in and published as a part of the annual report.

Again, the annual report of the state board should make commendatory and encouraging mention of the health work of local boards in every part of the state wherever the local board has undertaken and accomplished something. It is encouraging to such boards to be recognized in the annual report of the state board, and it will encourage others to follow their example. In all instances of important works of this nature, the results upon the public health should be accurately noticed, and should be published in the annual report as practical illustrations of the workings of sanitary laws. The annual report is emphatically the place for the publication of original investigations by the board, or of such experiments as have been conducted under its directions. Through this report and otherwise it is the true policy of the board to cultivate intimate relations with the local boards, to encourage correspondence with them and keep in touch with them as fully as possible on all questions of sanitary interest in the various localities of the state. In many cases they are mutually dependent upon each other, and the state boards are almost wholly dependent upon the local boards for some of the most valuable portions of the report concerning information which the local boards alone can supply. It is needless to say that the annual report can be made satisfactory only when it is aided by such information as vital statistics will afford. The supervision of the registration of such statistics should always be lodged with the state board with such control as will secure the best results. An annual report of a state board of health constructed upon these lines will become a current history of sanitary events in the state. It is a sort of diary, kept, as time goes on, from week to week, and month to month, and published annually. It affords a history of conditions which could not be obtained in any other way. Of course, boards which have been in existence only a few years, are not, possibly, in such relations with the local boards as will enable them to do all this. Much depends upon the organization and relation of the boards to each other and to the state law. In my own state this is far from satisfactory; in other states it may be better.

In regard to the second point: making the annual report of instruction and communication with the people: In one respect this communication must, in many cases, by reason of the small appropriations of our economical legislatures, be very limited. The appropriation is so vastly out of proportion to the populations of the several states, that we can only exclaim, "What are so few reports among so many?" and again, it is difficult to distribute those copies to the best advantage over the state. As to the distribution of these copies usually a most wasteful method prevails. In the first place the legislature claim a portion of every issue for their own personal use. Those who know the relative place which state medicine occupies in the mind of the average legislator, as compared with politics, will comprehend how likely it is that they will give their time to a careful perusal of such documents. Most of the remainder are sent to classes—to doctors or preachers or teachers, because they are such. Petty officers claim a copy by right *ex-officio*. The little residue may fall into the hands of those who would be benefited by reading them, but as a means for the general diffusion of sanitary knowledge, the annual reports of the state boards of health may be regarded as ineffectual. But there are two kinds of sanitary knowledge. The kind I have spoken of has been accepted as demonstrative, but state medicine is acquisitive, and the zeal and knowledge of workers in that branch of science are constantly opening up to view new fields of investigation, and developing new facts in many instances under the authority and direction of state boards of health. This would be more frequently the case if our stingy legislatures would appropriate larger amounts for our use that way. This kind of information, which is the result of experiment and new discovery, is not to be considered as common knowledge. Indeed it is not yet accepted and it must endure the test of thorough examination by other experts and be tried in the crucible of thought. It often perishes in the conflict of opinions, and again endures these testing processes. The annual reports of the state board of health are the proper exhibition grounds in which these candidates for scientific preferment can most appropriately present their claims.

I will conclude with a statement of a few minor points. Care should always be taken that copies of annual reports find lodgment in the public libraries, and that exchanges be made with the state boards of other states. In this way whatever value our annual reports may have may be preserved permanently, whereas by general distribution they are generally permanently lost.

Every state board of health should make it an object to collect a sanitary library for the reference of sanitary students. Such a library should contain the most important works on hygiene and the current sanitary literature of the day, and such publications as are likely to interest those who are engaged in the study of sanitary subjects; and such a library should be free to those persons who will make the best use of its advantages. There is one matter of detail which Dr. Baker did not mention, and that is the index. I believe this is a matter of prime importance. Looking through reports to find something that I have seen but do not remember where, is slow, unsatisfactory and often unsuccessful. As an illustration I will point to the first ten volumes of the American Public Health Association, which are almost worthless on account of the absence of an index. There is a great deal of valuable matter in those volumes, but it is a labor to find what you want, and the time, I hope, is not far distant when there will be published a full index to them. It will enhance the value of the work twenty five and even fifty per cent.

There is another matter which is neglected by many of our writers on hygienic subjects, and which I will illustrate by a fact that occurred at the last meeting of the association in Brooklyn. A paper was read there giving a full and ample statement of a disease which occurred in one of our cities, and there is not an indication in the paper to show in what city it occurred. It happened that the printer put the name of the city on the outside of the pamphlet. I have seen reports of state boards of health in which it is often difficult to find where certain occurrences took place."

Dr. Pinkney Thompson, president State Board of Health of Kentucky, spoke on the question as follows: "I understand from Dr. Baker that this question relates to the method of disseminating hygienic literature of facts among the public more than to making annual reports of state boards simply for the benefit of each other. My experience of twelve years in the Kentucky State Board has convinced me that so far as reaching the public and cultivating a knowledge among them or benefiting them in any way, the annual report, as usually put out in large books by the state boards, is useless. I believe Massachusetts has a pile that would make a fair library. I have one of them myself, and suppose my friend here has; but not one doctor in a hundred or two hundred in Kentucky has, and I do not believe that the public can be reached in that way. I want to endorse what Dr. Baker said about the tract idea."

At this juncture Dr. N. S. Davis, founder of the American Medical Association, was discovered in the room and invited to a seat on the platform. After an introduction to the Conference, Dr. Davis said he had no other thought in visiting the meeting than to come in quietly and witness the proceedings without attracting attention, but thanked the Conference very much for the honor which he said it did him in noticing his coming.

Dr. Thompson continued his discussion as follows: "I don't suppose there was a set of people in the whole country that, as a people, were so ignorant on all these matters twelve years ago as were the people of Kentucky, and not only they, but I am sorry to say a large number of the physicians of the commonwealth. Following at the beginning of our existence in the wake of Michigan and Massachussetts and my friend Rauch, of Illinois, for four years our board got into the habit of issuing nothing but the annual report. I think the first one was issued in 1878 or 1879. Our meager appropriation would not permit us to issue more than about 2,000 copies, and by the time we had stuck them into every postoffice in the state, and sent them to every legislator and county clerk, none were left for any one else. No good was done, except that the newspapers would cut out and publish such extracts as were of interest to the general public. In this way the *Courier-Journal* was of considerable service. When our present secretary came into office we adopted the other plan, and see no reason why we should change. There are few localities in the state that cannot be reached by a small pamphlet. These are sent with notices of any contagious or infectious disease and they learn how to avoid them. They will comprehend the fact, to use Dr. Cochran's expression, that if they don't want to be burned they must keep out of the fire. We have sent out two or three of these slips in regard to water supplies, and we are beginning to make the people of Kentucky believe that wells adjacent to residences are not healthful. Papers containing evident sanitary facts, unaccompanied with medical nomenclature, are distributed and have been found to be successful, while the annual report system has been utterly worthless."

Dr. A. D. Moore, of the State Board of Health of South Carolina, said: "As a step in the direction of the dissemination of public health knowledge, I will say that the State Board of Health of South Carolina, some months ago, issued a good many circulars on contagious and infectious diseases, similar to those mentioned by Dr. Baker, of Michigan. These were sent out to physicians of the state for distribution among the families they attend. Some of them have been placed in the public schools, and I am glad to say that the laity seem glad to get them and read them, and we hope some good will result from the distribution of these pamphlets on public health."

Dr. W. L. Schenck, member of the Board of Health of Kansas, said: "This is, really, one of the most important things that will come before us. An appreciation, on the part of the people, of sanitary services is necessary to sustain all sanitary organizations and action, and nowhere is there so much wanting as in the general intelligence of the people on this subject. We have done more, perhaps, in this direction under the auspices of the state boards of health than in any other way, but they have been able to reach only a small number. The suggestion that short papers on sanitary topics be issued, so that they may reach the people everywhere, is an excellent one. We have to reach the people in some way, and I think the question for us to decide is how we can best do it.

Dr. Benjamin Lee, secretary State Board of Health of Pennsylvania, said: "The Pennsylvania board desires to go on record as being most thoroughly convinced of the importance of the dissemination of information by means of circulars. Our board comes into touch with the people more directly, perhaps, than many other boards, from the fact that we are, in our state, as I have remarked, without the machinery of local boards of health to a very great extent; consequently, when occasion occurs for sanitary aid in any part of the state our board is directly called together. In that way we have been enabled to learn that our circulars for the prevention of the various communicable diseases are of very great value, and are very highly appreciated by the people of the state. We constantly have requests for them, not only from physicians, but from individuals and families, which have been visited by such diseases. We are surprised to see to what extent our teachers in the public schools are applying for these circulars, especially those on school hygiene. Our first circulars were gotten up in imitation of those of the State Board of Health of Massachusetts, very imposing in their appearance and very official documents; but we soon found that that was not the kind of document that the people could handle easily, and that they would be likely to carry with them, consequently we very soon reduced their size and put them into pamphlet shape, considerably smaller. We have recently taken a further step towards the dissemination and preservation of sanitary facts, and it seemed, at our last sanitary convention, acceptable. We had made a stout box-envelope which would hold twenty or more of these circulars. We had these marked on the outside with the seal of the board, 'Circulars of the State Board of Health for the prevention of disease; take this with you and place it where it can be readily referred to in case of necessity.' In this we placed one of each of our circulars which could be made use of in the home. These were taken by the gentlemen who attended the last convention, and I am confident that they will be preserved, and that as future circulars are issued they will find their place in this envelope where they can be readily referred to when diseases occur. It has been our custom when we issue these circulars to send them to every prominent newspaper in the state. We are careful that they shall be received by newspapers of both political parties. We have found that the slightest evidence that there is favoritism in this matter will bring down a storm about our head; and at our last sanitary convention it was rather ludicrous to have one of the papers say that the convention was gotten up in the interest of a certain candidate in the gubernatorial election. This statement was made because we happened to invite this gentleman to deliver a paper before the convention, but, principally, because we had placed by accident two Republican editors on our programme as vice presidents and left out two Democrats—showing that we need to be wise as serpents as well as harmless as doves. Reference has been made to the fact that the reports of the state boards of health do not, as a rule, disseminate information among the people. That is very true, but their object is very distinct from that of the circulars. The report of the state board of health has its interests, first, historically. It will preserve the records of sanitation in a state. It will preserve, unbroken, the history of the board itself and the history of every local board in the state, and fifteen or twenty years hence the volume issued now will become of very great historical value. In the next place the report of a state board of health is of very great value to all other state boards, and to all local boards. They find in it a record of the work of those who are laboring in the same direction with themselves. Lastly, these reports are of great value in impressing upon legislators and upon the press the importance of sanitary work and sanitary reform. Every intelligent editor will be willing to glance through the pages of the report of the state board of health, and will cull from it here and there matters that interest him; and they will in this way find their course to the people. But the report is especially of use when we wish to press our state legislatures. I am confident that we should not have had the State Board of Health of Pennsylvania had we not been able to present results achieved in Massachusetts, Illinois, Michigan and other states, and in that way convinced them that we were lagging behind in this work, and that much good could be accomplished and much money saved to the state by the establishment of a state board."

Dr. P. H. Bryce, secretary Provincial Board of Health of Ontario, said: "I wish to discuss the second point that Dr. Lee has referred to—the use of the annual report as a compendium of exact scientific knowledge for the use of other state boards and the use of local boards. In those states where we have local boards organized along some efficient basis, I frequently find that these boards are seeking exact knowledge, for instance, on the subject of water supply and the disposal of sewage, and have endeavored to collate from local and foreign boards information of use bearing on such subjects. Thus we find that a board doing its work amongst the people is receiving and disseminating at the same time. We seek to find in other reports information which may be utilized in advancing sanitation generally. I can conceive of no more useful way of disseminating information than by making annual reports as exact as possible, and introducing as much of practical investigation from the work done in this country and in Europe as is likely to be of value in furthering our own sanitary ends. In this way a great deal of the distribution of pamphlets becomes unnecessary. If you can get your local boards to do executive work they can take care of the individual communities better than central boards are likely to do. For illustration, the British government, two years ago, invited Colonel Waring to examine into the sewerage of the London Lunatic Asylum, which has 2,000 inmates. Colonel Waring has been able to dispose of the sewage of that institution successfully. Our board felt that this would be an important object lesson to the cities and towns that had this problem to deal with, and having Colonel Waring's plans lithographed we published a description of his methods in two or three thousand copies of our annual report. It cost $1,200 or $1,400, but I felt that we could not do better than to distribute such a model of work in that department. In the last nine months several of our large cities and towns have taken up the question of the disposal of their sewage otherwise than by conveying it into the lakes and rivers: and in that way these lessons become of practical bearing."

Dr. C. H. Fisher, secretary State Board of Health of Rhode Island, said: "I am quite interested in this question as to what the reports of the state boards of health should contain, and what they should present to the public, having had in my hands for the last dozen years a work of that kind, and it seems to be in order to present the plans taken in this respect by the boards of different states. In the annual report of the State Board of Rhode Island, it has been from the beginning the object to present what would be really a report of what has been accomplished in the state in the way of sanitation, and the measures that have been taken to restrict or prevent diseases by isolation or by any other means. There have been reports from all the town clerks every year. I have received reports from physicians and health officers, and these have been reduced to concise form, and published in the report, which will give a correct history from year to year of all the sanitary improvements in the towns, whether by the introduction of water or in the way of sewerage, or by improvement in public buildings, by ventilation, drainage or any other agency. This will give a correct history from year to year of progress in the towns. I may say that these reports from localities have been presented more largely than the work of the board itself. I myself personally last year visited from twenty to thirty villages, of from 1,000 to 5,000 inhabitants, and saw the authorities of those villages, had conferences with the owners of manufactories—that is, corporations—and in quite a number of instances induced these parties to introduce water into the villages, especially into the houses belonging to the corporations, some of which went to an expense of several thousand dollars. I do not propose to put that into the report of last year further than to say that a considerable number of villages were visited, and that improvements were made in consequence. It has been the purpose of the board in issuing its reports to incorporate something that would be valuable in the way of knowledge or information, and some of them, perhaps, have been rather lengthy. Those who have noticed the contents of the reports will remember that a few years ago a report on house drainage attracted considerable attention; one of the sanitary publications of London asked the privilege of publishing it seriatim. The *American Architect* said it was the best article of the kind that had been written in America, and Dr. Bell was the first one to ask the privilege of using the cuts, and other publishers, not wishing to wait until he should be through with them, had cuts of their own made. That paper was not presented to the people in a separate pamphlet as a whole, but such portions as would seem to be readily comprehensible were published and sent out in considerable numbers to intelligent people in the state; other papers which have appeared in the annual reports have had extracts taken from them and distributed, so that in this manner they would not look so formidable to the average reader.

We publish only a thousand annual reports, but every year we have taken from the report certain portions and publish them in leaflet or pamphlet form for general distribution.

The question that is under discussion is a kind of cousin or half brother to the question proposed by the State of Rhode Island, and I am glad to hear from the parties of the different states as to their methods of disseminating knowledge of a sanitary nature. In Rhode Island we have used methods similar to those spoken of by Dr. Lee, of publishing and distributing circulars in regard to communicable diseases and the best method of preventing or restricting them in any locality. Then again we have a monthly publication, and it was with considerable effort that the legislature could be induced to furnish to every paper in the state a copy monthly. This periodical, which we call the Monthly Bulletin of the Rhode Island Board, contains from sixteen to twenty-two pages monthly, and in it is embodied something that is likely to be of value to the people of the state. Ten-elevenths of all the public schools in the state are in receipt of them. I have asked the superintendents of schools of the different towns and cities to make inquiry in regard to what value these publications are in their respective towns, to ascertain what the teachers thought of them, and what they did with them; and I learn that in some places the superintendents have recommended to the teachers to read to the pupils some part of the contents of the different issues; and I know several schools where this is done and comments are made by the teacher, who, subsequently, during the month, questions the pupils in regard to the articles read to see what impression has been made. The introduction of this information into the schools is a kind of leaven which may, possibly, leaven the whole lump. It may be a long time—it probably will be. Still it looks as though the method would be of some benefit.

I am speaking of the methods used in Rhode Island, for the purpose of showing what we are doing there. It seems that we have not done as much as we would like, yet there has been a great deal of change in the last twelve years. More than half the cities and towns have a public water supply, whereas twelve years ago there was only one that had. Many have public sewerage, and a large number of corporations have private sewerage, and individuals in the country are having privies set away from the wells, and hog pens removed, and are taking other methods which tend to show that they have acquired considerable knowledge of what constitutes sanitation."

Dr. Geo. Homan, secretary State Board of Health of Missouri, said: "I presume that the dissemination of public knowledge means reaching the people. One of the most effective plans has, I think, been tried in Missouri, and that is of procuring the right and inserting, as coming from the health authorities of the state, sanitary items in the patent outsides or insides of the county papers. In that way the most thorough distribution can be accomplished, for the county papers are read more thoroughly by the people of the state than are any other publications. Another question I wish to hear discussed, is the organization of local boards of health. That is a matter of great importance, especially in Missouri, where there is far from thorough organization. I have been trying to mature a plan to accomplish an organization in the best possible manner, and in order to get all the light I can I shall move, during the course of the meeting, that a committee be appointed to consider that matter."

Dr. H. B. Baker, of Michigan, said: "We, perhaps, underestimate the value of reports from health boards, because we do not see the immediate results that we desire. It may be that this report is the only literature of the kind that a local health officer gets, and it may cause him to do good that he could not otherwise do. Although a number of these may go into the waste basket, in my judgment the results, though not so distinctly perceptible, accomplish good in the dissemination of knowledge through the local health officer to the public. I believe that we must in this, as in the matter of religion, go to the children. You cannot convert an old sinner so well as one just coming out of the Sunday-school and raised up in it, and it is the same way with the sinner against sanitary laws. By educating the teachers, and through them the children, we may hope, in the next generation, to accomplish much, and we should, though the results may not be immediately perceptible, labor earnestly for the benefit of the next generation, which we may hope to benefit more than the present."

"Dr. J. D. Plunket, president State Board of Health of Tennessee, said: "The question of health reports is certainly an important one, and one with which, in Tennessee, we have had serious embarrassment. I take it that in the older states, where the work has been going on for some time, the people are better informed, and have precept upon precept, until they can take hold of the subject in a practical way, and do more effective work. We have been in existence as a state board thirteen years. We have been trying to arouse an interest in municipal health matters, and so stimulate those organizations. I regret to say that we have not met with all the success that we had hoped for. We have a number of these organizations, but nothing like the number that Michigan, for instance, has, or Massachusetts. I think that a dozen will cover the number in Tennessee. Our annual reports are generally carefully prepared documents, but I doubt whether they reach even our health officers in a way that we would like. We concluded to supplement the annual health report by a monthly publication, similar to that which the gentleman who has just spoken mentioned, and we issue a Monthly Bulletin which we send broadcast throughout the state. Our doctors need educating probably more than the bulk of the people, because we have to make each doctor a disseminator of sanaitary doctrines. Many of them do not take hold of the work readily because of an idea that it is antagonistic to their business. I think that idea, however, is disappearing. The Bulletin, with which I suppose many of you are familiar, gives statistics of the state, and reports of sickness from county and city health officers, and in addition to this we make extracts from leading journals of such nature that they will interest the people and direct their attention to sanitary matters. It seems to me that if we could devise a plan to interest the large daily papers, we could do more to popularize these matters than we could in any other way. They have political and commercial editors, and why should they not have a public health editor, who could discuss sanitary questions and familiarize the people with them. They would consider the question not only in their own towns but in their homes. This is a personal matter, largely, and we want the housekeepers and wives of the country to become interested, and we want to see that the home, which is the unity, is a type, as it should be, of modern sanitary science. This is a perplexing question, and I am glad to hear the gentlemen discuss it. I hope that by hearing their views we can get at something practical. These long reports are first rate for historical purposes, and they furnish each one of us aid for preparing similar reports, and in that way they are valuable; but as for their reaching the people I don't think they are a success. Short leaflets have been adopted in Tennessee, treating of leading health questions, especially those of a zymotic character, giving a community where a case is reported special attention; but in that we have not been as much encouraged as we had hoped to be."

Dr. C. O. Probst, secretary State Board of Health of Ohio, said: "This appears to be an experience meeting, and I will speak of what has been done in Ohio in this direction. We are distributing little pamphlets concerning contagious diseases, and we are also publishing a Monthly Bulletin which we are sending out quite generally over the state. We have adopted the rule of holding not less than two meetings of the state board of health at places other than the capital city, and holding in connection therewith sanitary conventions. We hold two or three sessions according to the number of papers to be presented, and by these meetings endeavor to engage the interest of the people and enlist the co-operation of the more prominent men in the place. We have also had recently an interesting and successful joint convention of the superintendents of the public schools and the state board of health. By means of a circular letter we invited them to take part in such a convention and participate in a discussion of questions relating to school hygiene. The superintendents who attended expressed themselves as being much interested in the meeting, and have asked us to call another meeting at some future date, which we will do."

Dr. J. T. Reeve, secretary State Board of Health of Wisconsin, said: "It is true that we cannot publish annual reports in numbers to distribute as we can leaflets, but it seems that we ought to distribute them in numbers sufficient to reach all health officers and state boards. In my state it will take a thousand copies to do this. It seems to be that we must disseminate this knowledge among the people chiefly by means of smaller publications or leaflets. In my own state, where the health boards are organized annually in each town, I send to these health officers copies of our circulars, which we issue in English, German and Norwegian, concerning the principal contagious diseases; and wherever there is an outbreak of any one of these contagious diseases, I send tracts for distribution to the surrounding inhabitants; but what encourages me greatly is the fact that these circulars are called for more and more. I think that in the last three or four years the call for these little circulars has been steadily increasing, which indicates that the people are anxious for that kind of information. We publish them in very small form so that we can put them in letters as we do when we write. We distribute these circulars through schools where scarlet fever, for instance, has broken out. I have in some instances known of their being read in the schools."

Dr. W. L. Schenck, of Kansas, said: "I would like to make a request. While we are local boards and are expected to cultivate our own field, we are still parts of a great whole. Scientific sanitation is of such recent growth that we can all learn of each other. That is what we are here for. Many of our state reports have much in them that is of value, and I suggest a more wide interchange. I suppose that these reports are sent to the secretary of my board, but I have never received a half dozen. I would be glad to receive reports and think it would be well to send copies to the different members of the boards."

The president remarked that it was customary for one board to send enough copies to the secretary of another board to supply the members of that other board. Probably the secretary of Dr. Schencks' board had failed to distribute them.

Dr. Schenck replied that they did not reach other members of the Board if sent to the secretary.

Dr. Plunket said that in issuing the Bulletin of the Tennessee Board copies were sent by mail direct to all members of boards whose names were obtained, and he would be glad to see such a custom prevail.

Dr. J. H. Rauch, of Illinois, thought that this method would involve too much time and trouble, and if the secretary did not take enough interest to distribute reports sent him, the Conference could not help that. He said that several years ago there was an outbreak of small-pox in Illinois and the teachers in all the public schools devoted half an hour a day to instructing the children in that and kindred subjects. There were some localities in his state where sanitation was all right and others where it was not what it should be.

"Probably the only defect in the Illinois law is that local boards are not compelled to report to the state board. It then becomes necessary for me to glance over the Chicago, St. Louis and Springfield papers, where I see almost every day reports of disease. When it occurs in localities of my state I send out circulars and order the local authorities to distribute them. The local boards not being compelled to report, the efficiency of the work done by the state board depends very much upon the work of its executive officer. The press would much rather take hold of sensational subjects, unless the disease prevails to a great extent. I think we are making progress as fast as we can. Though we meet opposition, I do not see that we have reason to be discouraged."

Dr. Lee suggested that the question under consideration was similar to the next on the programme and that both be discussed together.

A motion offered by Dr. Homan that discussions be limited to five minutes for each member of the Conference, was carried.

The Conference adjourned until 2 P. M.

AFTERNOON SESSION.

The Conference was called to order at the appointed time, and entered into a discussion of the following query proposed by the State Board of Rhode Island: By what means can a proper comprehension of the principles and practice of hygiene be most effectually promoted?

The discussion was opened by Dr. C. H. Fisher, of Rhode Island, who spoke as follows: "Inasmuch as that question was discussed in some measure this morning it will be unnecessary for me to bestow much time upon it; in fact, I did not intend to do so under any circumstances, and the question was proposed, not with any idea that the proposer would be called upon to answer it, for it is not the usual way I think for one to ask questions and answer them himself: neither was it proposed because there were not ways enough to bring sanitary knowledge to the attention of the people—for they are numerous enough, and not because there could not be devised methods enough to employ the different ways; but in what way can sanitary knowledge be best impressed upon the minds of the people? That is, how can their attention be so engaged that they will study the subject and become acquainted with the principles which underlie sanitation and regulate its practice, personally and publicly? Now the difficulty with me in my state has been that I have not seemed to make the impression upon the public mind so that I could point to this one or that one and say: 'He has become acquainted with the principles of sanitation and hygiene.' I want to know how one can so engage the attention of the people and so impress their minds that they will feel that all their acts should be governed by their knowledge.

I think there should be a fear, a wholesome fear, of a violation of hygienic laws extant among the people to impel them to personal hygiene and health, and by arousing public opinion lead to the establishment of sanitary surroundings such as may be had by the authority of the legislature or municipality. I was convinced last winter of the importance of a thorough conviction of the necessity for public hygiene as well as private, because I endeavored to get a bill through the legislature devising methods by which some laws that we have on the statute book might be enforced. We have some good laws but they are dead letters. There are no statues which require imperatively that those laws should be enforced. A bill which I drew in the beginning of the session in relation to the adulteration of drugs and foods and all the material that enters into the composition of food and drink, providing for the enforcement of laws already passed, was met by a large number of persons who were engaged in defrauding the people by furnishing them adulterated drugs, food and drink. The milk clause killed the bill. Though I may not be able to prove it, I may say that a paper was subsidized by these parties, and lawyers were employed by them, and when the bill came before the committee for a second hearing, these parties tested their ingenuity in showing why the bill was arbitrary and not in consonance with the Rhode Island idea of personal liberty, and the right of every man to do as he pleased. There was reluctance on the part of the committee to recommend the measure. A large dealer in milk was on the committee and of course opposed it. It is very easy for persons to spend ten dollars defeating a bill when they can make a hundred out of it. Money can be raised to sustain every species of fraud, but nothing for sanitation. I wish to learn from this Conference what is the best way to convince the people that sanitation is needed. Every individual should practice it and public opinion should be aroused to urge on the authorities. I wish to learn some way in which this sanitary information may be riveted and clinched in the public mind. There has been a good deal done in Rhode Island in the way of public works that was in the direction of the promotion of sanitation. As I said this morning, a dozen years ago there was only one town which had a public water supply: now more than half of them are so supplied, and many sewers have been established. I do not take it that the influence of the board has done all this or even a large part of it. The people have had furnished them documents setting forth the advantages of pure water and the removal of garbage. One town procured a water supply, and you know that we are imitative creatures, and this may have led to others, and I hope the influence will continue; and so it is with sewerage. Many of the circulars which have been distributed have been extracts taken from the annual reports relating to the ventilation and construction of school-houses. I have had many letters from teachers asking for information on this point, and I have referred them to books where they may learn what they desire. I am glad that I can refer any teacher to half a dozen works that will aid him in learning what he wishes to know in the direction of sanitation. I hope there will be a large response to this question."

Dr. Rauch, of Illinois, said: "I have had some experience with regard to sanitation and my advice to the doctor is, try again. The time will come when he will succeed. It is impossible to secure legislation if there are men in the legislature or on the committees whose interests are of an opposite character. My advice is, try again. There is no royal road to doing anything. You have to take the time and circumstances. Occasionally you can get a legislature to do what you want them to, but not always. As to educating them, that amounts to nothing, and I think it scarcely worth while to discuss the question.

Dr. Fisher said: "Dr. Rauch acts on the principle that we do nothing as well as we know how. I think if you have a wholesome fear of violating hygienic laws it will have effect. If a man has a fear of hell before him he will be a little more careful how he commits criminal acts, and I think, so far as sanitation is concerned, that when a person really believes his health is at stake, he will be restrained from many acts that he would otherwise commit."

A member of the Conference asked Dr. Rauch how far he had succeeded in gaining the assistance of the public press and to what extent it might be relied upon Dr. Rauch said: "During the prevalence of a sensation or a heavy epidemic you can get the press to co-operate and act with you. As I remarked this morning, with a few exceptions, the press of our state and the adjoining State of Missouri is inimicable to the state board of health in reference to the regulation of medical practice. A number of papers are not willing to do the board mere justice no matter what it does. As I said before, there is no royal road to doing anything in this country, and persistent, patient effort is required. If you can't do it one time you can another. People and legislatures change. On the committee of which the doctor spoke there was a man who it would not have changed no matter what pressure might be brought to bear upon him. With such a man in the legislature he can defeat you in a great many cases. Take for instance this question of securing laws to regulate the practice of medicine. Fortunately, the law being silent on that point, the Governor had the good sense to appoint a representative of the eclectic and homeopathic schools on our board. At first I did not like it, but in our board the question of schools has never come up, and in voting on all questions we have treated them fairly and alike and have never acted on anything in which were not a unit, and by having these men on the board we have accomplished more than we otherwise would. They assist us in bringing their own schools into line. They were never disorganizers but have co-operated with us in everything, and in a number of instances I have succeeded in getting them to take the lead, particularly with regard to the practice of medicine. With regard to the press—there are newspapers in Illinois that take an interest in our board and defend it as a matter of principle, but that is not their rule. Forty-five papers of the state oppose us because of the advertising patronage. If you want any legislation in regard to sanitary measures you can only get it at the tailend, or not at all, unless some terrible calamity has befallen the people. That is the time to strike. Of course you can educate in some respects; and the most thorough way of making sanitation practical is through local health authorities. I think the house-to-house inspection in Illinois was the most practical way of teaching sanitary science that I know anything of. We made that visitation under the general laws. If we had asked that authority from the legislature we would most probably have been defeated. They sometimes give you powers not thought of at the time and you can do a great deal. We have utilized the law to regulate the practice of medicine to its fullest extent, and no doubt, if the matter had been taken to the courts, we would, in many cases have been defeated We have had more fights than any other organization of the kind in the United States, and we have lost one or two important cases because of technicalities."

Dr. Plunket, of Tennessee, said: "The modern newspaper is coming to the front as a distinctive feature and it occurs to me that it will be well for us to procure as far as possible an opportunity to be heard through its columns. The paper will reach adults, but if we want to lay a broad and deep foundation we must go to the schools and educate the young, and I believe that one of our greatest needs is proper text-books. There have been a number of efforts in the direction of teaching hygiene and elementary physiology, but none of them meet the requirements. I wish such a book could be gotten up and universally adopted, for I believe that our great hope is in teaching the young. For the present I think the press is our chief way to reach the end we are after."

Dr. Rutherford, state health officer of Texas, said that the public schools should teach children hygiene as regularly as their a b c's.

Dr. C. A. Lindsley said: "It will be conceded that the administration of public hygiene depends in a large degree upon the education of the people. We cannot legislate much in advance of public sentiment. It has been said that there is no royal road to accomplish this, and I may say that we are not confined to any one road to accomplish it. We discussed this morning several different ways in which we can instruct the people on this subject, and we have got precept upon precept, and line upon line as to what we should do. A good deal has been said about the newspapers. I merely rise to suggest a method which has occurred to me and which I have used with good results. I went to one of the leading papers of New Haven sometime ago and asked if I could use a corner of the paper for which I would prepare matters of practical interest on hygiene. The paper assented very readily, and I have from that time on been occasionally giving a few paragraphs. I think this is practicable and can be put into force any where. The editors will generally be very ready to afford you that accommodation. It is one of the roads to accomplish what we are aiming at."

The President, Dr. McCormack, said: "With one or two exceptions, and those for a short time, we have had the uniform assistance of the secular press in Kentucky."

Dr. Hill, of Kansas, said: "I wish to say that so far as my experience and observation go the newspaper is the right-hand man of the sanitarian, and I believe further that a well-written article in the newspaper by whoever it may be will be read by more people and listened to much more readily than would be the case in any other way.

I think the newspaper is the greatest medium we have for getting an idea before the people, and they do it for nothing as a rule."

Dr. Formento, of Louisiana, said: This question has, in my humble opinion, been answered in the numerous addresses which have been made by the gentlemen who have spoken, and all those means should be diligently employed in order to reach the object of bringing the people to understand the importance of sanitation, whether local or general, public or private. Among the means suggested are proper boards of health, reports which address themselves, not to the public in general, but to the intelligent part of the population—to the health officers of different states and counties, of the physicains and the reading public, through whom good influence is felt all over the country.

It has been recommended to issue small pamphlets or circulars in relation to existing epidemics, whether yellow fever, small-pox or other diseases. Those circulars should be issued at regular periods and should keep before the public the necessity for sanitation and the results of a violation of health laws. Those pamphlets, which we call sanitary tracts, should be issued regularly by the Boards of Health, general and local, and should be short and explicit, and should instruct the people as to what they should do to prevent extension of such diseases. Other means have been mentioned, but one method has not been mentioned, and I do not know whether it exists in this country. It is the establishment of municipal chemical laboratories supported by the city, such as exist in France to my personal knowledge, where any citizen has a right to go and ask for an analysis of his food or drugs. If he has any doubt as to the purity of articles obtained from his grocer or druggist he can upon the payment of a small sum, fixed by law, have the same analyzed. This is a great check towards the adulteration of food and drugs. Besides this the board of health has the right at any time to go into a place where food or drink is sold and demand for analysis samples of goods sold, as is sometime done here in the case of milk. Suitable penalties for adulteration are provided. I wish to know if this is done in this country, and if not, why not? It has given good results in France and I do not see why it could not apply here. We are accustomed to oppose anything that has the appearance of being arbitrary, but there is no sanitation without more or less arbitration. There is no sanitation without laws, and laws are useless when they are not enforced. Some of our laws are not enforced but are dead letters. The great point is to enforce those laws, and why could not sanitary laws be enforced as well as laws of less importance? I wish to ask if the laboratory system of which I have spoken is in practice or is practicable here."

Dr. Rauch answered by saying that the Agricultural Bureau at Washington had been doing some work of that kind and there was pending before congress a bill relating to the adulteration of food.

Dr. Lindsley in reply to a question said that the articles which he wrote for the New Haven paper appeared without his signature and upon the responsibility of the paper. The articles were put in on their merits which were expected to commend them to the attention of the reader.

Dr. Lee, said: "There is a law making the study of hygiene compulsory in the public schools. It was introduced in Pennsylvania by the temperance people with a view of showing the evil effects of alcohol. Its introduction as a compulsory study shows that it is capable of being made a strong thing in the way of popular education."

Dr. Baker, after thanking the members of the Conference for the discussion which had been had, said he "would answer Dr. Formento's question by saying that Michigan passed a law appropriating $30,000 to $35,000 for a building to be constructed in connection with the State University where there should be established a biological laboratory—a laboratory of hygiene; and one of the inducements brought to bear upon the legislature to have it pass the law was the having of a laboratory where any person could have an analysis of food products or drugs made. The law providing for the punishment of adulterators is not the best in the world, but penalties are provided. The public is slow to take advantage of such opportunities and we have exerted ourselves to inform them concerning this question. But considerable use has been made of the laboratory in this way. A very large number of analyses of water have been made. Perhaps the greatest good to the people has come about in that way. Recently I was asked by a village not far from Chicago to come to their town and look over the ground with a view of devising the best means of securing a water supply. I went over and we had an analysis by Professor Vaughan, a member of the board, and also director of the State Laboratory of Hygiene, and it must be of service to the village, for they are securing a water supply for all time to come. This is a matter of very great consequence and I am glad to see the people beginning to take advantage of these opportunities."

Dr. Rauch said that in his state a number of analyses of water had been made, but it was difficult to awaken the people to the advantages of water analysis. Sometimes they became interested and some times they did not.

The Conference took up the consideration of the following question proposed by the State Board of Kentucky:

Resolved, That upon an outbreak of yellow fever or other epidemic disease rendering the establishment of quarantine necessary, this Conference urges such co-operation in administration on the part of threatened states as will confine the disease to the point of initial attack, in place of the expensive, unscientific and unsatisfactory so-called quarantines at distant state lines.

Resolved, That this Conference urges upon the health authorities of each state the importance of such an administration of any quarantine they may establish as will furnish proper protection to, and show due regard for, the rights of states lying beyond them.

The discussion was opened by Dr. Pinkney Thompson, of Kentucky, who said: "I can readily see and comprehend that these two resolutions, if carried out, are of the greatest importance, at least to state and local authorities.

In the establishment of a quarantine in an outbreak of yellow fever, cholera or any other disease, the co-operation of the adjoining states is of paramount importance. The trouble that I have seen among the boards, especially in the southern states, is that in case of an outbreak the health authorities of other places are apt to conclude that the authorities where the disease exists are not doing their duty, and they set in themselves. I don't believe that I know of a single exception in many cases in the last twelve years where something of that sort has not occurred, and it was because of a want of proper appreciation on the part of one board of the power and authority of the other, and an ignorance of what those were doing. I know this was the case when the yellow fever outbreak occurred at Memphis. The board in a number of states, Kentucky included, were not satisfied with the quarantine regulations at Memphis. It was expressed by Illinois that they did not have confidence in the men below them although they at that time knew nothing about it themselves—they were not there, and were not going there. There was a case of yellow fever in Kentucky. I could not see how they could confine that disease to that locality, and the fact is that they did not do it. But we have increased in our co-operation until I believe it can be done. It was certainly to a great extent confined to Jacksonville in Florida. It was confined to a locality in Alabama, and it was confined to Jackson, Mississippi, when it broke out there. I do not think the extent of the co-operation should be the establishment of a quarantine at the state line, for instance, between Mississippi and Tennessee, or Alabama and Tennessee. It does no good in the world except to prove a nuisance and an incumbrance. I think the health authorities of those localities ought to be held responsible for letting people escape that they know are infected. We should have the confidence and co-operation of other boards, and in my judgment trusting them and realizing that we are looking to them for protection is the most efficient way of preventing the spread of disease—not quarantining against them. In 1879 the quarantine was put down so thick along these railroads that every little town had a quarantine. When the sanitary council of the Mississippi valley got into co-operation with the State Board of Louisiana and got them to understand that we were in sympathy with them, and were looking to them for protection, we got it. There has not been an epidemic in New Orleans since 1878. It takes a system of co-operation without interference. This interference of one board with another is what gets up trouble. We had a case of measles in a county in east Kentucky and the secretary of the board telegraphed to the adjacent states that there was a supposed case of small-pox there. The State Board of Tennessee telegraphed Dr. Hamilton to send some one there to investigate it and protect their state. The Tennessee State Board never heard of it. There was a panic, which spread all over the neighborhood and I think it did more harm than if we had never had government interference. What could Dr. Hamilton have done if he had found it small-pox? He could not have done anything unless the Governor had done like they did in Florida—tell the national government that the cost was too great for the state to undertake.

Of course the government did interfere down there, and rightly and properly, but Alabama did not tell the government that the state wanted it to interfere at Decatur, nor did the people of Jackson ask the government to send any one down there. What does a marine hospital fellow know about small-pox in the country. I think we should adopt this resolution in a shape that is called for by a due respect for the opinions, integrity and honesty of those who have these outbreaks to deal with. If I had not had confidence in New Orleans I would have told them that their boats should not come up the river, but I had it.

As to the second part of the resolution, I think it is a proper matter for this Conference to urge. It should insist that no state or local board should establish a quarantine until they can ascertain from the authorities where the disease is, what measures are taken to control it and confine it to its locality. If they endeavor to get up a panic about it they do more harm than good and render co-operation that is mischievous. If I heard there was a case of yellow fever in New Orleans I would not quarantine against that place until I knew something about the matter, nor do I suppose that Louisiana would quarantine against a case in Kentucky upon a rumor. If there was a case in Galveston I don't suppose that Louisiana would quarantine against the whole State of Texas. I want our co-operation to be of the nature that those on the ground think we ought to render, but if the co-operation means that we are going to interfere with each other because of lack of confidence, I say break up the business and let each state care for itself."

Dr. Plunket said: "I concur in what has been said on this subject; and recently a copy of a law that has been passed by congress has fallen into my hands, and it has surprised me. It seems to me that it practically supplants us in all this work. It is a law now, however, and it is a question how we shall meet it. I have always held that the state was competent to deal with local outbreaks, but here is a national law of a conflicting nature which must be given a practical working, and I think the sooner it is tested the sooner it will be repealed. With something of this view the secretary of my board called on the government to show its hand so that we might have something to present to this Conference bearing upon the subject, but the case proved to be not small-pox. Five cases were suddenly discovered on a branch railroad near Clarksville, and in order to see what the surgeon general might do in the case of a more serious out-break, the matter was referred to him. If we are going to do anything we must have confidence in one another, and by this interchange of thoughts we can get down to a rule of action which can be improved upon from time to time as we progress. We should work, not by theory or individually, but upon a common basis.

In 1879 an example of this was furnished us by the sanitary council of the Mississippi valley, a more important organization than which we have not had. This is a more comprehensive organization because it takes in the entire country. We must have confidence in one another and must adopt rules based upon our experience and upon the results of the past, and when we say we will do a thing we must do it. The importance of these things is greater now than it has been before. Under a government which is supreme in its regulations, we must all yield."

Dr. Rutherford, of Texas, said: "It seems that the gentlemen on the floor treat this subject very gingerly. If they want a precedent let them send a man to Texas and we will give them one. Let the government send a man down there and I will put him in quarantine so that a five cent marshal can't get him out. This board of quarantine formerly belonged to the navy department and should be carried back there. I was willing for that, but I don't want them to say if yellow fever is across the state line, you can't stop it until we get down there. That won't do. I can't stand that sort of work. I look upon an attack on quarantine almost as an attack upon me personally, and when they propose to send down a doctor who never heard of quarantine to look into the matter, it places us in a ridiculous position."

Dr. Salomon, of Louisiana, said: "I am glad this question has come up before the Conference because it is one in which I have taken much interest, particularly since my connection with the Louisiana State Board—this question of giving proper confidence to local health authorities. It appears to me ridiculous that upon the first appearance of epidemic disease, surrounding states and localities should immediately put on a quarantine. If a case of small-pox were to occur in Kentucky I don't think that Louisiana would quarantine. If a case of yellow fever were to occur in Alabama, I think the authorities of Louisiana would have confidence enough in the authorities of that state to wait until they should see that the disease could not be controlled. It is time enough then for the state to take measures to protect itself; but I think Alabama is able to protect herself and her neighbors, and I think our own board has demonstrated its ability of coping with any case in Louisiana. We have had yellow fever two or three times since 1878, and the last case in 1888, and there was no spread. Last summer was the only one since 1878 that we have not had yellow fever come to our quarantine, and there has been no epidemic from cases coming to us. I think the spirit of this resolution is the correct one. As long as there are state boards which have the means and the ability to cope with first cases of epidemic diseases, there is no occasion for senseless panics and quarantine disorder. I think the second proposition is important also. There are some boards, particularly those in the southern states, in cases of yellow fever, that show a regard for the rights of states lying beyond. Florida does not, and I am sorry that that state has no representative here. From all that we can learn of the administration of quarantine in Florida they have no regard for the right of states lying beyond. There is a so-called quarantine at Tampa which is no more than a paper quarantine. A certificate from the United States treasury official at Havana given to the captain of an outgoing steamer will allow a person to land at Tampa, and if they do not stop here, to go through other states. There should be something done. If the Conference would pass some resolution calling upon the authorities of Florida to have more care for the rights of adjoining states, I think something could be accomplished. We refused to allow a vessel coming from Havana by way of Tampa to land at New Orleans without quarantine. We believed that the vessel was in no better condition after having been to Tampa than if she had come direct from Havana. We have no faith in the methods of Florida, and while they may protect that state to some extent, they do not protect the states adjoining. I think there ought to be a full discussion of this subject so as to bring out a full expression as to what ought to be done under such circumstances. If states where epidemics arise have competent officials, I think it is well for the authorities of adjoining states to have confidence in them. When the fever occurred last year at Jackson there was a considerable panic in New Orleans, and the president of the board being away, my office was crowded by persons who wished to know what steps would be taken by us. I told them that we had confidence in Dr. Wirt Johnson, and when he showed that he could not control the disease we would do something. The same thing occurred when the fever appeared at Decatur, and I think that is the spirit that should be manifested by different boards with respect to each other. The absurdity it appears to me of local or state line quarantines upon the first case of yellow fever is patent. Is there any reason, supposing that a case should occur in the lower parts of the city of New Orleans, why persons living seven or eight miles away should not be allowed to depart? or even a half mile or a hundred yards, because every precaution has been taken, the patient and house isolated and sanitary police officers put there. There is no earthly reason why anybody else who wishes to leave the city should not do so. This thing of quarantining upon the first two or three cases is ridiculous and barbarous. After a case appears and its seen that we are not able to cope with it, it is then time enough for you to quarantine. (In answer to a question.) If Tennessee wants the agents of the United States Treasury Department or those of the hospital service to do sanitary work, Tennessee has the right to call upon them, but I don't think Tennessee has any right to call upon them to go into Kentucky to do sanitary work."

Dr. J. Cochrane, of Alabama, said: "I feel much interest in this and my interest goes with my past experience. The idea that is before us for discussion is, what sort of relations ought to exist between the boards of the different states; and is a large question. So far as the discussion has gone it has been devoted almost entirely to the idea that state boards ought to have confidence in one another, and ought to exhibit that confidence in a practical way. We have confidence according to our experience, and there was a time when the health authorities of Alabama had no confidence in the health auhorities of Louisiana. That was a good many years ago, but for a good many years we have had this confidence, and when they have had cases after cases of yellow fever we have never dreamed of quarantining against them.

Suppose we don't have confidence in the state board of health. What is to be done? Doctor Salomon stated that the Board of Louisiana did not have confidence in the sort of quarantine that was exercised at Tampa, and he suggested that it would be well for this body to pass a resolution finding fault with the Tampa quarantine and urging upon that board the importance of doing something that would satisfy the other boards. That is a practical question and at the same time one of very great delicacy. I remember a few years ago when an immense amount of pressure was brought to bear upon the board of Louisiana to force it to virtually abdicate its functions and to place the control of the quarantine of the mouth of the Mississippi river in hands of the National Board of Health: and I can remember that state board after state board, and also the sanitary council of the Mississippi valley passed resolutions having in view the accomplishment of that purpose—that they were not satisfied with Louisiana's quarantine and wanted it placed in other hands. The Louisiana Board stood up like a stone wall and defeated all those efforts, and that is why the National Board of Health collapsed. Suppose we get to bringing pressure upon the Florida Board; we might get ourselves into trouble. It is a sort of policy that needs to be carefully guarded. You heard the gentlemen who opened the discussion state a case in which the Tennessee Board appealed to the Marine Hospital Board to send a doctor into Kentucky to protect the people of Tennessee against small-pox. The Kentucky Sate Board finds its toes trodden upon, and good naturedly, yet in a way that showed they felt the pressure, protested. 1 had my toes trodden upon in a similar way, and the Tennessee Board is at the bottom of that.

They undertook to dictate to me what should be done with the town of Decatur after the subsidence of the yellow fever, and after the appearance of frost and ice, and it seems to me that this Tennessee Board has frequently been inclined to interfere with other boards. No possible occasion has occurred that they have not shown their hands that way. Not satisfied with protesting directly to me, they carried the matter into the quarantine conference that met at Montgomery and undertook to obtain there a condemnation of my refusal to do as they wished in regard to Decatur. You are playing with a two-edged sword when you are trying to interfere with the domestic affairs of another state. Years ago when we did not have confidence in the health authorities of Louisiana we did not make any outcry or abuse of them, but simply said, 'we are not satisfied with the protection you give us and we will protect ourselves.' That is all we did, and it seems to me that ought, to a large extent, be the policy of state boards of health. If Tennessee is not satisfied with what we do in Alabama, Tennessee may do what she pleases within her own borders to supplement our deficiency. If we had an established theory of yellow fever, and were able to define accurately the character of the danger arising under different circumstances in connection with it, we might enforce some recognized rule based upon recognized principles; but when it is so largely a matter of opinion and the majority of men connected with state boards of health have really so little knowledge of yellow fever—because of want of practical experience, we who have had to fight our battles, not in the library but in the field, don't like to submit when we hear a lot of persons advocating and seeking to make the basis of action scientific propositions which we believe untenable and unwarranted. Some of us are not going to submit. This new law, approved the 28th of March, I am afraid is going to be very mischievous. So far as I can see, it gives the surgeon general, at Washington, the power to go into any state and do whatever he pleases under the plea of protecting adjacent states from invasion by epidemic diseases. Suppose we had an outbreak of yellow fever in Mobile. In a general way it would be easy to say that Mississippi, Tennessee, Georgia, and even Kentucky might be in danger of invasion, and under the plea of protecting those states the surgeon general, under the law approved March 28, it seems to me, could do what he pleases. He need not stop our work unless we get in his way, when he could do it. I am not willing that the Surgeon General of the Marine Hospital Service shall invade Alabama and ignore our state and local boards. I have fought that idea of concentrating quarantine power in the United States Government from the beginning. We have refused to avail ourselves of any help, almost, from that quarter. When we had yellow fever at Decatur, we not only would not invite the surgeon general to take charge, as he did in Florida, but had to fight a desperate battle to prevent his being forced upon us. It happened that Grover Cleveland, who did many wise things, made a rule that the epidemic fund could not be used in a state that had a health organization without the approval of that organization. It was that rule that prevented me from being superseded and turned out of Decatur in my own state. The mayors of those two little cities immediately applied to the surgeon-general and he came down here, and when he declined to do anything without my approval they thought it a political matter and appealed to their member of congress, General Wheeler, who undertook to accomplish their purpose. He went to the surgeon general continually. Hamilton said he almost worried the life out of him, and when Hamilton convinced him that he could do nothing, he went to the President, and when the President refused him, he got up a petition and had it signed by every member of congress from Alabama except one, and backed that up by a letter from the Governor of my state, but Cleveland happened to have a back-bone, and said he made the rules in good faith. He said he supposed the State Board of Alabama had some good reason for its action. That is all that kept the marine hospital service out of Alabama, and the same effort was made to get the surgeon general to come down and disinfect the town, as he did at Jacksonville.

There is no more demoralizing agency conceivable than the turning loose of an immense amount of money in a yellow fever epidemic. In 1878 there was an epidemic in Memphis. Money was poured in there like water and it was used as if it were as cheap as water, and the whole people were demoralized. One man had to pay twelve dollars a day to get a negro woman to wash for him. What was the use of her working? It was such a lesson to the leading men of the place, that when the fever broke out in 1879, the first thing they did was to resolve that no matter what the circumstances might be they would not appeal to the public for help, for anything was better than the demoralization that followed the use of so much money. The same thing was connected with the so-called disinfection of Jacksonville. I undertake to say that the disinfection was utterly absurd and useless, and was not worth five cents toward securing the safety of the people from subsequent epidemic. I know that yellow fever prevailed there to the close of the so-called disinfection, away into the last days of the month of January. It was not put in the papers, but I was there and found it out. But it was the finest speculation Jacksonville ever made. There was a small town on the St. John. There was not less than half a million dollars poured in there during the epidemic and after it. It would have taken a trade during those months twice as great as Jacksonville ever had to have made as much profit. It would pay the people of Jacksonville to have an epidemic every summer if they could have the same amount of money poured in there. I speak feelingly of these matters because I have seen them over and over again, and I know how the charity of the great public has been imposed upon; and that is one of the fights I had at Decatur, when lot of them wanted to go in and grab all they could get upon the plea that the money was at Washington and they might have it as well as anybody. I could not be convinced by that sort of thing. The point I want to emphasize is that concerning the question as to what relations should exist between different state boards of health, and to how great an extent is interference warrantable or unwise. I don't undertake to condemn it altogether, but it is a delicate matter and has to be delicately handled, and as for myself if a proposition were pending to censure the Florida Board, I would vote against it. We in Alabama would not like to be censured, and I think we should be like the Louisiana Board and get obstinate and stubborn and not heed it.

Dr. Hibbard, of Indiana, said: "If some epidemic should break out in Louisiana that was dangerous to Tennessee, Tennessee should send a person down to Louisiana to see what measures were being taken, and if he found things all right he should come back and say so and all would be happy. If they are not doing right he should come back and report, and then stop persons at the state line."

Dr. Bailey, of Kentucky, said: "This is a National Conference, and we have not yellow fever in our state. I doubt if we have any epidemic disease. I suggest that the Conference so amend the resolution that it shall apply to other diseases, such as diphtheria and scarlet fever, which are very serious in some of the states, and which cause more deaths than yellow fever. I move that the term 'dangerous communicable' be substituted for 'epidemic.'"

Dr Bryce asked if the quarantine referred to meant state or local.

Dr. Salomon thought that the resolution itself answered the question.

The president said the resolution included any disease which might become so dangerous as to demand a quarantine.

Dr. Lee suggested that Dr. Moore, president of the American Medical Association, was in the room, and that he be invited to the platform.

The suggestion was carried, and the visitor was escorted to the stand by Dr. Lee.

Dr. Moore, after being introduced, said: "This is quite a surprise to me. I came in as a spectator, to sit upon the back bench. Sometimes I had rather sit upon back benches than front ones; nevertheless, I feel at home wherever there is a gathering of gentlemen discussing questions of hygiene. At one time I had the position of president of the State Board of Health of New York, beginning at its foundations and continuing though its infancy, and my interest in such matters can never abate."

Dr. Bailey's amendment was adopted, and upon motion of Dr. Salomon, the resolution, as amended, was adopted.

The report of the committee appointed to investigate the methods of quarantine in use among state, provincial and other authorities, was called for. The chairman, Dr. Rauch, stated that only one committee acted and that was composed of Dr. Lee, Dr. J. D. Jones and himself.

The former gentlemen had sent a report to him with the request that it be presented to the American Public Health Association, which was done. Dr. Rauch submitted a bill of seventy-five dollars for expenses of Dr. Lee, which was ordered to be paid.

Dr. Lee, chairman of the committee on leprosy, read the report of that committee, as follows:

REPORT OF THE COMMITTEE ON LEPROSY.

BENJAMIN LEE, A. M., M.D., Ph. D., *Secretary of the State Board of Health of the Commonwealth of Pennsylvania, Chairman:*

GENTLEMEN: The undersigned, appointed a committee at the last meeting of the National Conference of the State Boards of Health to consider the subject of leprosy in its relation to the United States, beg leave respectfully to report: That since the date of their appointment, the investigations of competent observers in India, the Hawaiian Islands and the West Indies, have been carefully studied, and the chairman has visited the Island of Cuba in order to satisfy himself as to the actually existent condition in that nearest focus of infection to this country. The principal works consulted have been those of Arch-Deacon Wright, entitled "Leprosy and its Story, Segregation its Remedy;" of Wellesley C. Bailey, Esq., B.C. S., entitled "A Glimpse at the Indian Mission Field and Leper Asylums;" of Arch-Deacon Wright, entitled "Leprosy an Imperial Danger;" of Mr. Edward Clifford, entitled "A Visit to Father Damien," and of Dr. W. Munro, of Manchester, late medical officer at St. Kitts, West Indies, entitled "Leprosy." The committee desire to express their especial obligations to Mr. Wellesley C. Bailey, secretary to the Mission to Lepers in India, for his kindness in furnishing them the latest and most reliable information from English sources. The moot point at the bottom of this investigation is, of course, the contagiousness of the disease, and the committee would here put on record their profound conviction, if ever a learned society committed a blunder which was near akin to a crime, it was the Royal College of Physicians of England, when, in order to gratify the vanity of a few doctrinaires and glorify the great British doctrine of free trade in disease, as well as in all other commodities, it adopted the report of the committee which declared leprosy non-contagious, and thus stamped with the seal of its immense authority the most damnable medical heresy of modern times. The complete apathy which followed the promulgation of this declaration in all parts of her majesty's dominions with regard to the segregation of the disease was as astonishing in fact as it was mournful in its results. All precautions were thrown to the winds. Barriers between the clean and the unclean were broken down. And, now, mark! The first of the two works of Arch-Deacon Wright, to which I have alluded, was published in 1885, the second in 1889. In the former he reports the number of lepers in British India at 120,000, in the latter at 131,618, according to the official returns, but adds that those who know India well, place it at not less than 250,000, while many contend that half a million would scarcely cover the number of these unfortunates. And here let us say, parenthetically as a fact which comes very near home to us, that Dr. Leloir, clinical professor of diseases of the skin at Lisle, and author of a "Traité Pratique et Theorique de la Lepre," expresses the belief, as the result of his observations and inquiries, that there are more lepers, in proportion to the population, in the West Indies, than in the East Indies. Such are the consequences of the non-protective policy in leprosy. Now let us glance for a moment at an experiment in the opposite direction. The government of Norway, where the disease was an actually present evil, did not allow itself to be carried away by the new-fangled theory of the English dermatologists. On the contrary, it not only continued to keep its leper population under the strictest surveillance, but added new restrictions, making the segregation of a leper compulsory, absolute and permanent from the moment of the discovery of the disease. Here again note the result: In the year 1857 there were in Norway, at the beginning of the year, 2,863 cases, while 242 new cases were discovered during the year. In the following year, the number had fallen to 2,794, with 235 new cases. In 1860, the number reported was 2,819, with 226 new cases. Ten years later it had fallen to 2,619, with 160 new cases, and ten years after that to 1,717, with only 29 new cases. Thus in twenty-three years the number of lepers has been reduced from 2,863 to 1,717, while the number of new cases has fallen from 242 to 29, a diminution of eight-ninths, indicating with mathematical exactness, the possibility of its complete extinction, at no distant day. In view of this positive demonstration from both sides of the question, namely, the rapid extension of the disease when a full intercourse is allowed, and its as rapid diminution when the isolation is insisted on—in view of the fact that most reliable and painstaking observers who have personally watched the disease in all its phases for years, not getting their knowledge afar off, and by hearsay, have almost universally abandoned the doctrine of the heredity of the disease, and moreover have proved by the most careful experiments that it is very rarely conveyed by inoculation—the Royal College of Physicians certainly owes it to humanity and to the medical profession, in whose sacred name it speaks, to recant this heresy in the plainest language and the most complete manner.

It is not enough that, stimulated by the interest shown by the Prince of Wales as president of the "Father Damien Memorial Fund," the college should urge the government to "institute a full and careful scientific investigation of a question which in the interest of humanity calls for immediate attention." There is no time to waste in a useless and long drawn out scientific investigation. There is ample information on which to base an opinion, and that opinion exactly the reverse of that to which the college has already given world-wide expression. Common honesty requires that it should confess its mistake as publicly as it made it. The extent to which this dogmatic utterance on the other side of the ocean has dominated medical opinion in this country, is indicated by the fact that since the last meeting of this Conference, a number of the most prominent physicians in Philadelphia have united in publicly rebuking the board of health of that city for enforcing its regulations for the reporting and segregation of the disease.

Before considering the subject in its intimate relation to this country, let us glance for a moment at the present distribution of the disease throughout the world. In Europe, we find it, as already said, in Norway, to an extent which has compelled the government to exercise the most careful measures for the segregation of its victims. In Sweden, a few cases are known to exist. In Iceland, there are about one hundred cases. In Russia, it is making its way stealthily along the shores of the Baltic, in Esthonia, Livonia, Gourland, Finland, Cherson, the Crimea, and among the Cossacks of the Ural, being prevalent in the Caucasus, the Delta of the Volga and Astrakan. A few lepers are found in Austria. They abound in Constantinople and are found in Macedonia, Thessaly, Crete, and other parts of the sultan's dominions. The disease is decidedly on the increase in Greece and the Archipelago. A few lepers are found in Malta; in Italy there are a few cases in every public hospital and not less than a hundred in the Island of Sicily. In Spain they are scattered over all the southern provinces, Catalonia, Valencia, Andalusia and others, making it necessary to establish leper hospitals at Granada and Malaga. The mountainous district of Lafoes, in Portugal, contains a large number and there is a leper house at Lisbon. In France it has fixed its home in the Rhone district, along the shores of the Mediterranean, and at Nice, and fresh cases are constantly occurring in families previously unaffected. Traveling eastward, we find it in Asia, as follows: Lepers swarm in Arabia, Syria and Palestine. Jerusalem has a leper hospital. It is very common in Persia. In Asia Minor its presence is evidenced by the fact of a leper hospital at Scutaria. We have already alluded to its immense prevalence and fearfully rapid spread in British India, under the fostering care of the Royal College of Physicians. In Indo-China we meet it extensively in Burmah, Siam and Malacca, and not less so in the French Colonies. In China proper the lepers are almost innumerable. Leper houses are as common as they were in England four hundred years ago, and that is saying much. In the city of Canton alone there are between three thousand and four thousand cases. They are numerous in Japan, the Indian Islands, Kamschatka and the Aleutian Islands. Proceeding now to the great dark continent, on which our illustrious compatriot has been recently throwing a ray of light, we find many in Egypt, Abyssinia, Darfur and Senegambia, and on the coast further south many, with an alarming tendency to increase at the Cape of Good Hope; some on the west coast, and in the Islands of Madeira, the Azores, St. Helena, Madagascar and Mauritius. In the Pacific, we find it in the Sunda and Philippine Islands, and the fearful story of its introduction and rapid spread in the Sandwich Islands, until every fifteenth of the population is a leper, is familiar to us all. Chinese and Indian immigration has introduced it into Australia. Still continuing across the Pacific, we find it firmly established in California, whose representatives in this Conference gave us timely warning at the last meeting. Lepers are numerous in Mexico, Central America, Ecuador, Venezuela, Uruguay. They are numerous in French and British Guiana. Leprosy is rife in many provinces of Brazil, hospitals being found in five different cities. The Antilles are full of it. Jamaica contains from seven hundred to eight hundred lepers. In Barbadoes, the population has increased six per cent. while lepers have increased twenty-five per cent. In the North American Continent we already find cases of the disease in Greenland, in New Brunswick, and in British Columbia; and in the United States—in Minnesota, Wisconsin, Michigan, Oregon, South Carolina, Louisiana, Texas and Florida, and, as before noted, in California. We are warranted therefore in the assertion that leprosy is cosmopolitan. No pent-up Utica confines its powers. It makes naught of latitudes or of altitudes. It spares no age and respects no race. The Anglo-Saxon, the Teuton, the Sclav, are susceptible to its contagion as well as the Hindoo and the Sandwich Islander. Witness Father Damien, so long the show-card of the non-contagionists, now lying in a martyr's grave under the frowning shadow of Molokai. Let us not take refuge in a fancied immunity due to climate or parentage. They will prove but broken reeds to pierce us as we lean upon them. We have, as has been shown, leprosy to north of us, leprosy to south of us, leprosy to east of us, leprosy to west of us. We have even a few centers of infection within our borders. These, however, are as yet insignificant. If proper precautions are taken, they will cease to exist in the course of a generation. In view of the situation, what is the part of wisdom? Two courses are open to us. First, the do-nothing policy which has prevailed until nearly the present time. The result of this will be that in fifty years, there will be lepers in every hamlet and leper houses crowded with their mutilated victims in every city. Second, the policy of absolute and implacable segregation in the case of those who are already fairly domiciled in the country, the prohibition of marriage to all lepers, and the prohibition to all uninfected persons of the inhabiting of infected houses; and with regard to foreign lepers, the policy of absolute and implacable exclusion. With the adoption of these measures which, undertaken at this time, will entail very little hardship and will not be difficult of execution, there are those now living who will see the day when there shall not be a leper in the land. How shall the principle of segregation be practically carried out? Those who have given the subject the most careful study believe that careful investigation would bring to light lepers hiding in every state in the Union. Shall every state then establish a leper house? Common sense cries out against such an absurdity. Shall each state set apart a leper ward in a general hospital? Humanity forbids the incurring of such a risk. One, or at least two colonies would accommodate all the lepers on the east side of the Rocky Mountains and the same number would be sufficient for those on the other side. Such a colony already exists in Louisiana. There are lepers enough in Wisconsin and Minnesota to warrant the establishment of one in that section of the country. Let those states deed the land occupied by these leprous communities, or which may be set apart for them, to the United States and let every leper, no matter what his wealth, or his social position, be removed to one of these colonies. Let every provision be made for the care and comfort of the colonists, but let the separation of the sexes be absolute during the genetic period of life. To every house in which lepers have lived, which is not within the limits of the colony, let the torch be applied; or should this be impossible, let the most thorough disinfection be employed, not forgetting the Mosaic precaution of scraping the walls. How shall the policy of absolute and implacable exclusion be carried out? It is probably safe to say that there are not half a dozen physicians in the United States, who would recognize a case of leprosy in its earlier stage. But in order to make quarantine effective it is essential that there should be an expert in leprosy at every port of entry, at which passengers arrive from infected countries. If the government cannot find such, it should select men for the purpose and send them to Havana to study the disease. All immigrants from leprous countries and all Americans who have been domiciled in leprous countries, as, for instance, the Sandwich Islands, should be stripped and every inch of their bodies subjected to the most rigid scrutiny. In prompt compliance with a suggestion made at the last meeting of the American Public Health Association, the Supervising Surgeon General of the United States Marine Hospital Service has issued an order looking toward the exercise of a rigorous quarantine against this disease, of which the following is the text:

To Medical Officers of the Marine Hospital Service, Collectors of Customs, and others concerned:

The national quarantine act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases," provided that no vessel or vehicle coming from any foreign port or country where any contagious or infectious disease exists, or any vessel or vehicle conveying persons or animals affected with any contagious disease, shall enter any port of the United States, or cross the boundary line between the United States and any foreign country, except in such manner as may be prescribed.

Attention is now directed to the increased prevalence of the contagious disease known as leprosy in several foreign countries, and the danger of its increase in the United States through the immigration of persons affected with leprosy, and by the direction of the Secretary of the Treasury the following regulation is framed under authority of the foregoing act, subject to the approval of the President, to protect the people of the United States from the introduction of leprosy:

1. Until further orders, no vessel shall be admitted to entry by any officer of the customs until the master, owner, or authorized agent of the vessel shall produce a certificate from the health officer or quarantine officer at the port of entry, or nearest United States quarantine officer, that no person affected with leprosy was on board the said vessel when admitted to free pratique, or in case a leper was found on board such vessel, that he or she with his or her baggage has been removed from the vessel and detained at the quarantine station.

2. Medical officers in command of United States quarantines are hereby instructed to detain any person affected with leprosy found on board any vessel, but such officer will permit the departure on outgoing vessels of persons detained at quarantine in pursuance of this regulation, provided such vessel shall be bound to the foreign country from which the said leper shall have last sailed.

JOHN B. HAMILTON,
Supervising Surgeon General, Marine Hospital Service.

Approved:
WILLIAM WINDOM, *Secretary.*
Approved: BENJ. HARRISON.

From Dominion Report of Department of Agriculture for 1889.

"A very interesting report on the Leprosy Lazaretto at Tracadie, N. B., is given by Dr. A. C. Smith, the visiting physician at that institution. He reports twenty persons suffering from that disease and in the lazaretto, five new cases having been admitted since the last report, and three deaths having occurred during the year. Leprosy, he states, is dying out in Tracadie, but as cases were reported appearing in the neighboring institutes, Dr. Smith made a special tour of inspection, which resulted in his finding a focus of the disease between Caraquet and Shippegan, and he traced from this center several cases to other settlements. He strongly urges permanent measures of segregation as the only means of stamping out this loathsome disease. It would appear from the tenor of his report that there is some reluctance on the part of persons in suspected houses to allow the inspecting physician to enter them for the purpose of examination, and he strongly urges legislative action to assist segregation of the disease, not only in the interest of those living in affected districts, but to prevent the spread of leprosy, a subject forcing itself on the attention of the world at large.

(Signed) "I. CARLING, *Member of Agriculture.*"

Dr. Reeve presented a minority report from Dr. Hoegh who, he said, was a Norwegian, who had had exceptional facilities for studying leprosy. His father was surgeon-in chief of the Norwegian hospitals, and Dr. Hoegh was in the habit of seeing the disease there. After coming to this country he had studied the subject and was acquainted with nearly every case of leprosy that has come here from Norway. The report is as follows:

REPORT OF THE MINORITY OF THE COMMITTEE ON LEPROSY.

The undersigned member of the Committee on Leprosy is unable to subscribe to the report formulated by the chairman and the rest of the committee with the recommendations for the prevention of the spread of the disease, and takes the liberty of submitting the following minority report:

While it is admitted that leprosy is a contagious disease, it is held by the undersigned that the danger of contagion is very much exaggerated in the majority report; and that we shall in all probability be able to exterminate the disease in the United States, without having recourse to measures which are unnecessarily severe, and which disregard the ordinary rights of the diseased individuals. To deprive an individual who has committed no crime, of his property, to shut him up in an asylum for life, to prevent him from forming legal marriage, and even to extend this draconic law to his relatives, who have not shown any sign of disease, as the majority of the committee proposes, seems to be the height of cruelty and injustice.

It is a matter of common observation that laws in opposition to the sentiment of the community are poorly enforced and fail in their object. If lepers are to be treated as criminals, communities are not apt to furnish juries that will accept physicians' statements as to the presence of the disease in any legal case. This will be much more probable in a country where, according to the expression of the majority report, but very few physicians are familiar with the early stages of the disease.

A further disadvantage of too rigorous measures will undoubtedly be that lepers will hide their disease and that their friends and families will help them to elude the vigilance of the sanitary officers. In this way the disease will have a good chance to spread unobserved and uncontrolled.

If the disease were as easily communicated as small-pox or measles there might be some excuse for absolute isolation; but there are facts enough to prove that it does not spread from the diseased to the healthy, except under circumstances of close personal intimacy. In relation to this side of the question, it must be permitted to call attention to the fact that by far the majority of leprous married persons fail to give the disease to their spouses, and that only a minority of the children in leprous families become lepers. This fact can be easily ascertained by any body who will peruse the official reports from the surgeon-in chief for the leprous disease to the government of Norway.

It appears, furthermore, from these reports, that lepers who for half a century have occupied hospital wards in common with other patients in Norway, both in Lunggegaards hospital in Bergen, and in Rigs hospital in Christiana, never have communicated the disease to any of the other hospital patients; nor during this long period in which from one to four leper asylums have been in activity in Norway, has any attendant, washwoman, nurse or physician taken the disease from any of the patients.

It seems that facts like these prove that the disease can be controlled without incarcerating its victims.

Much is said about the stern policy of the government of Norway. Let it first be observed that what we are apt to understand by the government, viz: its executive branch has no more right to promulgate laws in Norway than in the United States. The legislature makes the laws very much as it does in this country, and the laws regarding leprosy have never made segregation compulsory, absolute and permanent as the majority report states.

Before 1885 nobody could be compelled to enter a leprosory. Lepers were not separated from their families. They were simply enumerated, and the official physicians were ordered to visit them and assist them with advice and medicine. It is probable that the advice usually comprised, among other things, an admonition to avoid close relations with healthy people, and to enter asylums, where the domestic conditions were very unfavorable.

In 1885 a law emanated giving the parish boards the right to compel *pauper* lepers to enter the asylums: but married paupers could not be separated from their wives or husbands, if they objected to such a separation. Lepers who were not paupers cannot, according to this law, be compelled to leave their homes and families; but the local boards of health are by this law empowered to regulate the domestic arrangements in leprous families in such a way as the boards may find proper. This practically amounts to this: that the boards of health demand that lepers in their jurisdiction shall be provided with separate beds, and that they must have their own separate utensils and clothes.

Leper paupers that are married *may*, if the parochial priest, the official physician, and the high sheriff of the county unanimously so decide, be separated by sending the diseased to an asylum, and lepers who disregard the rules given by the sanitary authorities may also be compelled to enter the leprosories. It will thus be seen that lepers are not compelled to leave their homes, *except* when special reasons, such as gross carelessness and disobedience of the rules of the local health boards make the patients more than usually dangerous for the public health.

In former times it was by no means uncommon that healthy children shared bed with lepers; and it is known that it has happened within the last ten years that articles of bedding and clothing that had belonged to deceased lepers have been distributed to the poor.

These facts probably prove that the compulsory, absolute, and permanent segregation made by the government of Norway, and to which the rapid diminution of the disease is attributed, in the majority report, is very materially different from the measures proposed by the majority of the committee.

The number of lepers in Norway in 1856 was about 3,000; in 1889 about 1,000; a decrease in a third of a century of sixty-six per cent.—an average yearly decrease of about sixty lepers. If this goes on at a similar rate the next generation will see the last leper in Norway. To what can these happy results be ascribed? Clearly not to segregation in hospitals, as the percentage of the total leper population in Norway which was in the asylums has varied between twenty-nine and thirty-nine per cent., respectively, in 1866 and 1883. Nor can it be ascribed directly to emigration, as there emigrated to 1886 only sixty-seven lepers according to government statistics. To this number I have been able to add nearly one hundred cases who developed the disease after their arrival to the United States. But this number is clearly too small to account for the rapid retrogression of the disease. The most probable answer to the question of the cause seems to be the following: From the beginning of the fifties, public attention was directed to the disease; cases were enumerated and became known as lepers, and people had, in this way, the means of avoiding close contact with them. The town boards did what they could to improve their miserable hygienic conditions, but the most important factor is, undoubtedly, the general improvement in the habits and comforts of the people. Houses are better, there are more beds and clothes, and more personal cleanliness.

It has been necessary to dwell upon the contemporaneous history of leprosy in Norway to such an extent, because the majority report bases very largely its conclusions and recommendations upon the fact that the disease has diminished in Norway. It is to be regretted that the actual circumstances were not better known and better understood. The majority report adduces some statistics from India. Inasmuch as it admits the gross unreliability and defectiveness of these statistics, it is difficult to see how they can be used for any scientific purpose whatever.

The rapid extension of the disease in Hawaii shows how the disease will spread amongst a primitive people with defective appreciation of personal cleanliness, something that is not denied. If lepers are allowed to dip their food with their fingers out of a common receptacle with other people, it is evident that an avenue is open for contagion; and this and many similar habits, different from those of the white race, are cultivated on the Hawaiian Islands.

By examining the geographical extension and the history of the advance and the disappearance of the disease, one fact must attract attention, and that is, that it is most prevalent in the less civilized countries, and in such localities where a very poor population lives in squalor and filth. It has, from the early dawn of history, been prevalent in India and China and in those countries it exists yet as much as formerly. It was once extremely common in Europe, but now it has disappeared from most of the European countries, and it has disappeared first in the centers of civilization, lingering along in the remote regions. For instance, in France it existed in Auvergne, Bretagne and in the mountains of the south, in the beginning of this century, while it had disappeared from the rest of the country. In Norway it is exclusively a disease of the lower orders, never attacking the better situated classes.

In regard to the history of leprosy in the northwestern states, the writer of the report will say that he is tolerably well familiar with it. Through circulars sent to ministers, merchants, physicians and other prominent men among the Scandinavians, nearly every case that has been known and recognized was investigated. Since the beginning of the Scandinavian emigration, probably less than two hundred lepers have come to this country—less than twenty live to-day—spread through the north western states. Not one of the now living known lepers was born in the United States. The children and grandchildren of deceased lepers, of whom many now live amongst us, have remained free from the disease, which has never appeared in any of them. No instance is recorded or known where any native of this country has been contaminated by any of these immigrants. In view of these facts it does not seem permissible to indulge in the alarming view of the majority of the committee, who believe that if we do nothing "in fifty years there will be lepers in every hamlet, and leper houses, crowded with their mutilated victims, in every city." In the present state of civilization in the northern part of the United States it seems as if the disease does not find those special conditions which it requires for its extension, and with the most ordinary care it ought to be possible to stamp it out, not only in the solitary instances where it is found in the northwest, but also in California and the south.

In accordance with the views above given, the following practical recommendations are respectfully submitted:

1st. Leprosy immigrants should not be allowed to become domiciled in the United States, but be sent back to their respective countries. With the closure of our ports to the immigration of the Chinese, the danger of the importation of the disease from China has ceased. As the Norwegian govermnent has very accurate information about its lepers, it will be an easy matter to guard against the introduction of leprosy from Norway, as the Norwegian government probably will give its willing co-operation. As long as there are reported no cases of leprosy imported from the West Indies, it does not seem necessary to organize any board for the personal inspection of these immigrants we may receive from those countries.

2d. The lepers that we have the misfortune to have among us should be under the control of the sanitary authorities to this extent, that no leper should be allowed to sleep in the same room, far less in the same bed, with a healthy person. He should have his separate clothes, towels, bedding, dishes and other eating utensils. He should not be allowed to enter public halls, churches, theatres, schools, and similar places where people congregate promiscuously. Nor should he be allowed to use public beds in hotels, sleeping cars or steamers. He should not be allowed to travel from his home except under permits from the sanitary authorities. It should be the duty of every physician who becomes aware of the existence of a case of leprosy, to report it immediately to the proper sanitary authorities. The families of lepers, or others who have been in contact with them, should be examined once every year by a competent physician, under the orders of the sanitary authorities, with a view of the early detection of new cases.

KNUT HOEGH.

Dr. Bryce, a member of the committee, in explaining his position on the subject, said: "I think I stated in a letter to Dr. Lee that while agreeing with the general terms of the provisions which he proposed, I still thought with regard to the humanitarian side of the question that any govermnent undertaking any such extreme measures would of necessity be expected to give every provision possible for the comfort of those people in their segregated condition. I am glad to know that the report of Dr. Hoegh which has been presented by Dr. Reeve gives us a more pleasant view of the contagiousness of the disease than we had a right to suppose from general literature. I have placed it along the line somewhat of tuberculosis. I think biological examinations of the disease show it to be very largely a growth similar in its slowness and some other characteristics to tuberculosis. During recent years we have received much light upon a disease which eight years ago was deemed non-contagious by a large majority of physicians. There is no one to-day who would say that tuberculosis is not a contagious disease; in Italy, isolation has been provided for this class in all communities. I am not prepared to say, and do not think the public sentiment of this country is ready to say, that those afflicted with tuberculosis are to be separated from the rest of the community.

There are many things entering into this question and the dangers of tuberculosis may be greatly lessened indeed. But while that is true and while the report presented by Dr. Reeve may be largely true—for I suppose the gentleman is fully aware of the matters on which he speaks—we are in a peculiar position. We are comparatively free from the disease and we do not want it to have a foothold. We do not wish to take the chances of its increasing here.

"Our cities and towns are growing with enormous rapidity and it may be that twenty years hence the conditions existing may be such that the disease can be dealt with effectually only by extreme measures. It seems to me that if we err on the side of severity, common prudence demands that extreme care be taken at once that the 30 or 40 or 100 cases now on United States soil should be segregated, and placed in homes as in New Brunswick, where they can be treated with the greatest kindness. In view of these two reports from two eminent authorities, I think I may be excused for having signed a report which may seem to place me in a position of recommending a harsh measure for a disease which to-day may be trifling, but which fifty years hence may be alarming."

Dr. Salomon in discussing the reports and the questions proposed by the State Board of Pennsylvania: What steps should the United States Government take to prevent the introduction of leprosy into this country? said: "As I was appointed to open the discussion on this question, I would like to say a few words I have not prepared anything on the subject submitted, because I think that the rules as adopted by the United States Treasury Department, which have been read, are sufficient for the purpose; I think they are working well, and as regards the question proposed by Pennsylvania, I think the desired end can be accomplished by the methods now in use. But while upon the report of the committee I would beg to state that I cannot altogether agree with Dr. Lee. I think his views as to the contagion of the disease are somewhat exaggerated, and I agree to a large extent with the paper read by Dr. Reeve. I have taken quite an interest in this disease as we have had it in Louisiana for quite a long time, and in the beginning of the century we had a leper colony in that state. I have made it my business to investigate those cases at St. Martinsville in the Teche country. This town, with the exception of New Orleans, is probably the oldest in the State of Louisiana It was formerly the center of refinement of the French-speaking people. It was situated on the Tesh bayou in a fine country, and here the wealth and refinement of New Orleans congregated. In 1798 a woman from San Domingo found a refuge in St. Martinsville from the disturbances of her country. After she had advanced somewhat in age, been married and had one son, she manifested symptoms of leprosy. She was the only case there at that time—1802. Two years ago I was shown the spot on the Tesh bayou where her hut was built; she was separated from the community and placed in this hut. Food was brought near her house and she would come out and get it and then go back. She was not allowed to come in contact with any inhabitants. Her son grew up to manhood and died between the age of sixty and seventy, as the certificate shows, of heart disease. He may have had leprosy though it never actively manifested its presence. Two years ago there were nine cases of leprosy in St. Martinsville, and every one was a lineal descendant of the old woman who died in the hut on the banks of the bayou, and the descendants of one grandson No other cases were there. While I was a believer in the contagion of the disease this went far towards changing my opinion—I began to believe in the heredity of the disease. Some of these parties were married, two of the women living with their husbands. One had been married two years and the others seven or eight. Their husbands showed no signs of the disease. In one of the families there were five children and three of them had leprosy; in the other family there were three children and one had leprosy. I questioned the oldest inhabitants of the place, and saw an old woman over a hundred years old who knew the woman who brought the disease to the place, and the only case of leprosy which existed outside the descendants of this original case was in a negro man who had waited upon and even slept in the same room with the grandson of this woman, who was the grandfather of the present generation of lepers, and when his employer or master died, his clothing descended to this negro servant, and he contracted leprosy. This went to confirm my theory that leprosy is a contagious disease, but contagious by inoculation. I do not believe that unless you come actually in contact with a leper and are inoculated you will contract the disease. In the Charity Hospital, at New Orleans, in twenty years' experience there has been a leper ward, and there have been from two to seven cases there. None of the attendants or other patients in the hospital have contracted the disease, and there is only one instance where the disease was contracted by an outside person, and that was in the case of a Catholic priest who was in the habit of visiting these lepers. He told me he believed that he caught the disease from handling the patients. He died with it. Therefore, I say that the cases presented by Dr. Lee, I think somewhat exaggerated. I am speaking from my own individual experience and observation, particularly in St. Martinsville where there was at one time a population of five thousand or six thousand. There is no history of a leper having existed there except in this particular family, and we went to almost every house in the town with every physician in the place. They informed us of every case and took us to see a number of reported cases that were not cases of leprosy."

Dr. Lee asked if that was the only center of leprosy in Louisiana.

Dr. Salomon replied that there were some few scattered cases in the southwestern part of the state in the parish Lafourche, also a number of scattered cases in New Orleans, seven or eight of which he had seen himself.

Dr. Lee said there was a recent report issued concerning the number in New Orleans, and it was quite large.

Dr. Salomon said: "Yes, it was made by Dr. Bland, who now occupies the position of chief sanitary inspector for the board of health. He claims to have found something like forty cases in New Orleans. I think this number is exaggerated. I was taken to see a case of elephantiasis, which was called leprosy. It would be a fair statement to say there are between twenty and twenty-five, including the six or seven in the charity hospital in New Orleans. I went to see a case in the rear of the fashionable portion of the town, in the person of a German boy eight years of age. It was a well-marked case of tuberculous leprosy. He had had it, his mother told me, three years. There were three other children in the family. I saw father and mother and grandfather, and all were healthy. His mother told me she had never seen any disease like her son had, and she was satisfied her son had not, and its origin is hard to tell. Eight or ten blocks away I saw another case, in the person of an old German woman of about sixty. She was unable to say where she got it, and said she had never seen anything like it. I speak particularly of St. Martinsville, because I took special pains to make an investigation."

Dr. Ruggles, of California, read some extracts from a paper on this subject, by Dr. Orme, of California.

Dr. Salomon moved that the Conference answer the question proposed by the Pennsylvania Board, by saying that the measures taken by the United States government to prevent the introduction of leprosy into this country are sufficient.

Dr. Lee discussed the motion as follows: "It is admitted by Dr. Hoegh that a minority or small proportion of the children of lepers acquire leprosy. It seems to me that that admission alone takes most of the force out of his argument. Shall we let lepers marry and propagate leprous children? In the next place, the humanity which is seen in hospitals and the extreme care which is taken in treating lepers, together with the scrupulous cleanliness which I observed, particularly in Havana, makes it an impossibility for the buildings, or even the clothing to become infected. Outside the hospital we have, in a greater degree, the contagious agencies of filth and carelessness, and it is reasonable to suppose that immunity would reside in a hospital when it would not in a dwelling, and especially in the dwellings of the poorer classes. The minority report made allusion to the Hawaiians as being an unclean race. It is well known that they spend most of their time in the water, and if there is a clean people, so far as physical cleanliness goes, it is the Hawaiians. Dr. Salomon's conclusion that leprosy is hereditary and not contagious, is not supported by any who have studied the subject on a large scale, and it is conceivable in the case which he mentions that contagion was taken from the infected house and clothing, and it is not necessary to suppose that it was communicated through an abrasion of the surface, any more than the clothing which contains germs of small-pox or yellow fever must be supposed to convey the disease through an abrasion. The report of the minority throws some doubts on the statistics of the majority report. Those statistics are governmental statistics and should be correct, in so far as they show an immense increase in the disease. The only figures given which were not governmental, were those of observers in India. I concede that the government did not observe them all, but the figures are correct as a minimum if not as a maximum. As regards the regulations which the minority report would substitute for those proposed in the majority report, I desire to ask whether any member of this Conference, finding himself or a member of his family a victim of leprosy, would not prefer to have himself or member of his family in a well-regulated institution, with proper medical attendance and every comfort, rather than to have a government inspector coming every few days to his house to see whether he slept in the right bed or was fondling his children too much. As far as I am concerned I would not allow such inspectors in my house, but would very willingly submit to segregation, and would send any member of my family to a colony. But this supervision, to see what you eat out of and whether you sleep with your wife, seems to be inhuman."

Dr. Reeves said: "I wish to say, in reply to Dr Lee, that I did not understand Dr. Hoegh to throw discredit on the statistics, but upon the conclusions arrived at—that in four or five years the number of lepers could have increased from 120,000 to half a million, it would be an entire revolution of the ideas that have been held, to believe that such a change could have taken place in that length of time. In Wisconsin we have four cases, perhaps five. We have a case which has been reported, but which has not been fully determined. The disease has existed there for several years, and not a case has resulted in the state from contagion, though the families have not been separated at all. In the last four years there has been no effort made to separate these, and no cases exist there whose origin cannot be traced to Norway. Two hundred lepers came to this country from Norway and settled in the northwest, and now not more than twenty remain. The rest have died.

Dr. Salomon's motion was carried.

Dr. Lee offered the following resolution:

Resolved, That this Conference respectfully requests the President of the United States to instruct the Secretary of the Treasury to amend the rule of a recent law for preventing the spread of contagious diseases from one state to others so as to limit the operation of such rules and regulations to such states as may, through their constituted health authorities, ask for national assistance for their own states.

Dr. Cochran thought a committee should be appointed to consider whether the resolution conflicted with the act passed by Congress March 28.

The president stated that the resolution had been drawn in accordance with that act.

Dr. Ruggles said he would like to ask what position such a resolution would put California in with respect to the small-pox which existed at El Paso, and the means for dealing with it. He said two hundred cases existed here, and Arizona would do nothing to protect California, and persons afflicted with small-pox could take the Southern Pacific cars and come to California.

The president said that Arizona, being a territory, was under the control of the United States government which could prescribe suitable relations to govern the matter of small-pox.

Dr. Cochran said: "The question the gentleman puts is the very one we have been defining to-day. We propose that one state shall take care of herself, and if she does not feel able, that she may call upon the United States government for help. The point we wish to avoid is the surgeon general's coming into a state and taking charge of it. I think the resolution meets the case."

Dr. Ruggles said: "Small-pox cost Los Angelos, three years ago, sixty thousand dollars, and a repetition of that occurrence was not desired."

Some one suggested that the California authorities should go to vaccinating.

The resolution by Dr. Lee was carried.

NIGHT SESSION.

The Conference was called to order in the Maxwell House at 8:00 P. M.

The following question proposed by the State Board of Health of Michigan, was taken up: To what extent is it necessary to moisten the air of rooms at the time sulphur is burned for the purpose of disinfection after the occurrence of diphtheria, scarlet fever and small-pox.

The discussion was opened by Dr. Bryce, who said: "I was considering this afternoon the amount of moisture which would be necessary with an ordinary given number of grains of sulphur to make $H^2 SO^3$, or sulphurous acid, which is the active agent in the disinfecting process.

I find if we take one grain of sulphur and convert it into sulphur dioxide we would have exactly the same amount, of course double, as would equal two molecules of air; in other words, one-half of air would form the acid with sulphur dioxide. If you carry that calculation through, and assume that the humidity of the air of the room is about seventy-five per cent. of saturation, raising the temperature twenty or thirty degrees Fahrenheit—which is as high I suppose as burning sulphur would raise it—would reduce the humidity to one and one half. You have one-half the moisture necessary in the air, and half a grain of water would be necessary to every grain of sulphur, which would mean that one-fourth the amount of sulphur dioxide fumes in the air would have to be supplied in the shape of vapor of water. If the vapor of water were supplied in a room in the shape of a very fine spray, reaching far up, and if the sulphur dioxide fumes could come readily into contact with it, it seems to me that, taking five pounds of sulphur to an ordinary room, you would require about one-fourth of five pounds, in other words, one and one-half pounds of water, to fulfil all the conditions. In the ordinary process of disinfecting a room one of the difficulties is that water is put on to such an extent as to destroy a great deal of the furniture. With a small nozzle or fine syringe you could supply a pound of water in the shape of fine spray, which would remain in suspension long enough for the sulphur dioxide fumes to come in contact with it. It would be a desirable precaution to brush down the room-walls and ceiling with an ordinary brush with five parts in a thousand of perchloride of mercury, thereby destroying all the germs that might not be reached by the ordinary sulphur fumes, if there were a layer of dust. So that if the walls were brushed down thoroughly with perchloride, and spray applied, I don't see why one part of water to every five of sulphur would not fulfil the scientific conditions. If there were curtains and things of that sort which were not removed, it might take more water with the sulphur fumes to reach every point. Four or five years ago we had some two hundred cases of small-pox in thirty houses. We treated each house in succession, burning such clothing as was of little value, the other clothing being thrown into a solution of probably two parts of the thousand of perchloride of mercury. The blankets and quilts were left in this twenty-four hours. The room was washed down with the hose and thoroughly cleansed with the perchloride. After that all the doors and and windows were tightly closed and a pot with burning coals placed in the center of the room and about five pounds of sulphur for the thousand cubic feet of air space were set burning. The result was satisfactory, not a case of infection growing out of these thirty or forty houses in subsequent months. It must not be forgotten, however, that all the native population were vaccinated, and we must assume that strangers coming into the houses were either vaccinated or the houses were thoroughly disinfected. I think that in houses where there has been small-pox, scarlatina or diphtheria, washing down the walls and cornices with perchloride, putting in a certain amount of moisture in the air with an abundance of sulphur dioxide, will be found sufficient to thoroughly disinfect the rooms. It will be remembered that at the American Public Health Association in Brooklyn, statements were made in regard to disinfecting houses by burning sulphur, and the results were said to be satisfactory. While that may be true in many cases, I do not think we should risk infection by burning a little sulphur in a pot or stove in the room."

Dr. Baker said: "I want to state a little experience in our state, which may be of use in this connection. Each year in our state we collected the experience of fifteen hundred health officers, with scarlet fever and diphtheria, and tabulated the returns. In tabulating the results of these outbreaks, we put in one column the number of deaths in those cases where we employed isolation and disinfection, and in another column we placed the deaths where these means had not been used. The average result for 1886, 1887, 1888, is, that in the outbreaks where isolation and disinfection were neglected there were five times as many cases and deaths as there were in the outbreaks where isolation and disinfection were enforced. The practical point I want to get at is this: Whereas, the method mentioned by Dr. Bryce destroys pretty much everything in the room, the method we use does not destroy the furniture. Of course it will kill all plants and living things, but the curtains and the oil paintings in the room will remain uninjured. The method is burning sulphur in the room, with no special provision for moisture. I have seen this occur: A house in which there had been seven cases of diphtheria, with one death, was disinfected by this method, and immediately afterward a party of eight, including a number of children under ten years of age, came into the house, and not a single case resulted. No special means were taken to add vapor of water to the atmosphere. This is actual practice with the disease, and I am talking about diphtheria. And if it is not necessary to destroy all the material in the house, I do not see the use of it. We have here in this table the average experiences of the years 1886, 1887 and 1888, and the same thing has occurred each year. Four-fifths of the cases which would occur without isolation and disinfection are prevented by this method. I don't see how you are going to reduce that by adding a vapor of water, and if you are not going to reduce it by using something else, there may be a great saving of articles which are sometimes more valuable than money. It is a serious matter to go into a room and destroy such things as the family portraits, and if it is unnecessary, why do it? My impression and experience is that it is unnecessary. Our method is burning sulphur in the room and we recommend not less than three pounds to the thousand feet of air space."

Dr. Rutherford said: "I will give some of my experience with small-pox. I have a peculiar people to deal with. If you say to a Mexican, 'I want you to be vaccinated,' he will say, 'God's will be done.' He will shrug his shoulders and not want to be vaccinated. When he gets on this side of the river he loses his Mexican identity, and if he doesn't get vaccinated he can't send his children to school, or do anything else in the neighborhood. I use chlorine gas in disinfection. Many of the roofs of the houses which I disinfect are of thatched grass five inches thick. I generate chlorine gas in the house until I see it coming out through the roof. In Hidalgo, near the Mexican border, we had, in the earlier part of the year, ninety-eight cases of confluent small-pox, not counting varioloid, and the local authorities found it impossible to stamp it out. There was an appeal made to the Governor to break up this small-pox. On the 4th of April I did not have a case, and it was done by using chlorine gas. I was brought into contact with the Mexican people on that subject. Going across the river I had a consultation with the three largest neighboring Mexican cities, and knocked the bottom out of about forty Mexican boats, so that the people had to cross at the ferries. They were allowed to pass only on the presentation of a certificate that they had had the small-pox or had been successfully vaccinated. The area in which these cases existed fronted two hundred and sixty miles, with a width of ninety-five. I opened two hospitals. I would not let a child go to school until it had been vaccinated. I did not allow them to traverse the streets in funeral processions after victims of the disease. It cost the state one thousand three hundred and seventy-five dollars to take this decisive action, which was a small sum in comparison to that which had been spent by the counties in which it existed before I went there. The people down there seem to think that they must have small-pox, and carry their children across the river to get it and be through with it. Any locality in Texas can call on the Governor for assistance, and in that case I take charge of the disease. After all, your boards crystallize into one man who directs its movements, and as is the case there, one man is the state board of health."

Dr. Ruggles, said: "I have been interested in the conversation of the gentleman from Texas, and am personally interested in the treatment of small-pox. I have been connected with the state board of health for a number of years, but have been city health officer of Stockton from time immemorial. I endorse every single word that the gentleman from Texas has said in regard to the use of chlorine gas. I use the chlorine straight, black oxide of manganese and sulphuric acid. My success is equally as great as that of the gentleman from Texas, and while I have not the same class of people to deal with I can be as arbitrary as he can be. The city that employs me gives me full power, and pays every bill that I order. Therefore, if I don't succeed in stamping out an invasion of small-pox, it is my own fault."

Dr. Lee: "What effect has chlorine upon articles of value?"

Dr. Ruggles: "It destroys their color."

Dr. Rauch said: "From 1866 to 1873 I was sanitary superintendent of Chicago, and about the time I assumed official authority my attention was called to the use of carbolic acid. During the time mentioned it became necessary for me to take care of a good many cases of small-pox. Before that, all the clothing of parties afflicted with small-pox was burned. It occurred to me that I might save money to the municipality by putting carbolic acid, in the form of a fume, into use. I made some experiments in a room at the small-pox hospital. I took crude carbolic acid and poured it upon chloride of lime, it being my intention to use the chlorine as a medium for distributing the carbolic acid. All the clothing was treated in this way, and I never heard of a person contracting the disease from clothing which had been so treated. During the seven years we had two thousand patients, and not a case of the disease was contracted from clothing which had received this treatment, after the owners had left the hospital."

Dr. Hill, of Kansas, said: "The discussion was pretty much like Artemus Ward's lecture on, 'The Babes of the Wood;' he talked on everything else but the babes in the wood. I would like to be able to tell the people of Kansas whether it is better to use water or not. I did not know that we were discussing the question of disinfection in all its phases. Every old woman uses sulphur, and very few know anything about chlorine or carbolic acid. We like to know more about sulphur—shall we use it wet or dry?"

The president announced the following question proposed by the State Board of Kansas: "Is it not both important and very desirable for all state boards of health to have a uniform system of blanks for the reports of vital statistics?"

Dr. Thompson said: "The laws in the states are different and a blank that would work in Connecticut might not in Texas, and so on. It does not matter how we get our information, so we get all we want. What we want to know is, a person's nativity, sex, age and cause of death. In many cases the law prescribes the kind of blank that shall be used, and the state board of health, if it should recommend another blank, could not enforce its use."

Dr. Cochrane said: "I cannot agree with the gentleman who has taken his seat. I differ from every statement that he has made. It is difficult to collect vital statistics at all, but if you are able to collect them at all you are able to prescribe the form of the certificates and the items that you wish to know. We are trying to collect these statistics in Alabama where the matter is under the control of the state board of health, which prints the certificates and distributes them throughout the state, so that every birth or death that is reported is intended to be reported according to that one common system, and we have a good many items of information to gather that the doctor has not mentioned. One of the chief values of our figures is that we may be enabled to make comparisons with other states, and that we may do this it is important that our reports should be gotten up in something of a like manner."

Dr. Hibbard said: "I have had some little experience in this matter and I am glad to hear Dr. Cochrane say that the value of statistics lies mainly in comparison. Whatever is in them is to be obtained by comparison, and to this end we should ask the same question in the same way, and put them in the same form, if we are to use them to their full advantage. There is no room to discuss the proposition at all. It is a self-evident fact that blanks should be the same."

Dr. Rauch said: "We had a meeting several years ago at Washington at which this question was discussed thoroughly. The forms prepared by myself and used in Illinois were made in accordance with the action taken there, and unless the blanks are uniform the work amounts to nothing. Unless you can draw comparisons with other localities and other states much of your work amounts to nothing. The value of uniformity cannot be questioned."

Dr. Reynolds said: "It is not worth while to discuss this question, because we are discussing an impossibility. In my state the statutes govern the form in which reports shall be made. A penalty is provided for non-conformity with the law in this respect, and how are thirty-five states to get uniform laws? (A member of the Conference suggested that the question was, whether uniformity was desirable or important.) I think it will be well for them to be so, but it would take a lifetime to get them so. I think these things will regulate themselves. If we ask the legislature to make a change they may abolish the whole matter in doing so. If the figures are obtained a mathematician can draw his conclusions and comparisons."

Dr. Salomon said: "We are not asking for uniformity in statutes. The question is simply one which is in the power of every state and local board of health. They all get up their own forms for reports of deaths and births, and is simply in these reports of vital statistics to the different state boards that the desirability for uniformity exists. I think this is an important question and one which is self-evident. If we can get uniformity in our reports it makes the matter of comparison much more easy."

Dr. Baker said: "I think it would be a waste of time to discuss vital statistics here. There will be found men on both sides of the question of strong views, and I will ask the postponement of my report until other business is disposed of."

The Conference took up for consideration the question proposed by the State Board of California: "How to prevent contamination of potable waters."

Dr. Ruggles began the discussion as follows: "The importance of California's question is evident. We are peculiarly situated in that state. There is not a state in the Union that is more poorly sewered. We talk about our fine climate and ask you to visit us, but I will say that there is but one town in the state that is properly sewered and that is San Diego. San Francisco has a death rate of twenty-three every month in the year and sometimes more, with Oakland and Sacramento but little behind, and this is on account of bad sewerage. That implies contamination of water. The earth is honey-combed with water closets, cess-pools, etc.; their contents percolate into the surrounding earth and contamination of our drinking water results. We have in Stockton a system of well-digging that is, perhaps, novel. Our wells are bored. We have a stratum of clay, which we call hard-pan. This is as impervious to water as rubber, and is found six or eight feet below the surface. We bore, say twenty feet, into the gravel, and put in pipes of galvanized iron, which protects, so long as they last, the water from contamination from the surrounding ground. But the pipes become oxidized, and in four or five years look like they had been riddled with buck-shot. Our water is contaminated by the water closet and cess-pool arrangement, and our state board is trying to educate the people to the necessity of protecting themselves by establishing, as far as possible, more effective sewerage. The little town I live in is wrestling with the sewerage question, and will decide it on the tenth of next month, and I am sorry that I will not be there. Our system has been improved by Colonel Waring, the best sanitary engineer in the United States, and we hope to improve matters considerably. I can offer no solution to that question other than to remove the cess-pool and water closet as far from the drinking water as possible, and that can be done only by a perfect system of sewerage. I was pleased with that portion of the Ohio law which says that the cess-pool shall be eight inches thick, of brick, and hermetically tight. If we cannot get good sewerage, the next best thing is those hermetically sealed arrangements. We must have water, and must have it clean."

Dr. Reeve said: "I don't know what I can add to what Dr. Ruggles has said. When the question was raised as to how we should resume specie payment, some wise statesman said, just resume. The way to prevent contamination is to keep contaminating materials away. It is an easy thing for us to shut up a well. We have a duty in educating the people as to how little is the purifying effect of the soil upon water passing through it. There is a general impression that the soil will purify water. I know a man who thinks five feet of soil is sufficient. It seems that we should teach the people better than that. It is uncertain how far water may percolate through soil before being purified, and the people should be taught that the presumption is against finding pure water in any well in a thickly-settled community. At the last meeting of the American Public Health Association, this subject was ably presented to us by a committee, who told us that getting good water for any community was a question of expense. It could be supplied with money. But suppose it is supplied—the question arises of keeping it pure, and keeping the water shed where it is obtained free from contaminating influences. We have had some startling lessons as to the possibility of germs of disease, such as typhoid fever, especially, retaining vitality in apparently pure water, and I think we want to steer clear of the belief in all artificial filtration. I would like to hear a discussion as to the power of artificial or patent filters of any description to purify water so as to make it really pure. It seems to me that the only way to secure a pure water supply is to prevent contaminating material from entering it. If sewage gets to the water supply we are not safe in using the water, no matter how clear it may be made by natural or artificial filtration. In a number of cases I have known towns to receive their water supply from artesian wells, run by corporations, who secure the concession that pipes shall connect with other sources of supply, to be used in case of fire, etc. It is not always well to trust to these devices, for the water to supply you may be drawn from the lake or river instead of from the artesian well. I feel like recalling the refrain of an old song which I have forgotten, 'Beware, She's Fooling Thee.' "

Dr. Bailey, said: It might be said that this question could be answered easily enough by saying, prevent anything that will contaminate your well from getting into it. I think Dr. Ruggles is fortunate in the nature of the soil he has. He has less trouble with his water supply than we have in most places. There can be no contamination of the supply except through the opening. If he seals it so that no surface water can get in through the same hole the question is easy enough and it is much easier than if it were in soil like that of Memphis before 1878, where the water supply and the privy vault were in juxtaposition, so that the soil allowed percolation from one to the other, and you could not tell out of which you were drinking. The contamination was thorough and complete. So it is in most wells we find, and the question might be widened some—"How to purify water after it becomes impure"? We recognize various ways. If you have a water supply with sufficient force the solution of the water problem is in he Pasteur filter. I don't think there is anything comparable to it from a sanitary standpoint. After having forced it through the porcelain it is as pure as it is possible to obtain it, and the expense is very small when you come to consider the advantages derived from it. We have the testimony of such men as Sternberg that this water can be used for the purposes of the laboratory, and these filters are easily cleansed and kept pure. If they eventually become a source of infection and contamination we can replace them by new ones. I do object to the average filter. When the filter has been used a week, save me from the filter and let me have the water before it gets to it. According to the testimony of scientists the water from the Pasteur filter is the purest we can use. I have a single tube that furnishes me three gallons an hour. You can get them for fifteen gallons an hour. (In answer to a question) I don't think it would be practicable to use one Pasteur filter for a city."

Dr. Lee said that the case of the gentleman from California could be met by the general adoption of the dry earth closet, in which the fecal matter is dropped into a receptacle and removed, so that it can never reach the water supply. It is an expedient which is very simple, easy of adoption and cheap. As regards the purification of the water supply of a city, the Anderson system would prove effective. The entire water supply of Antwerp, which was obtained from a very muddy stream, was, he said, purified by this system.

The next question discussed was that proposed by the State Board of Ohio: Should state boards of health have executive powers?

Dr. Baker discussed the subject as follows: "If by the term 'executive powers' is meant the executing of certain functions, for the performance of which state boards of health are needed, then I think that beyond question state boards of health should have executive powers. They should execute all such laws as these: 1. For the collection of statistics, and all facts and information useful for the preservation of life and health. 2. They should execute laws designed for the creation of new knowledge, for original research, by means of laboratory experiments, and by experiments such as those undertaken by the Massachusetts Board, to learn concerning the filtration and purification of water, the disposal of sewage, etc. I regard it as very desirable that they should be able to investigate directly and thoroughly into the causation of diseases. Water supply, sewerage, etc., are general subjects influencing somewhat many diseases. I would be glad to see state boards of health execute laws designed to secure the study of the causation of each important disease, such as consumption, diphtheria, scarlet fever, typhoid fever and yellow fever, so that all the factors in the causation of each disease might be known, absolutely and minutely, and consequently their prevention might be much easier and more certain. I believe that if this were done, we would very soon be able to teach our people just how to prevent the greater part of all such diseases as rheumatism, neuralgia, erysipelas, diarrhœa, pneumonia, bronchitis—in fact all the most prominent diseases that now cause the great bulk of the misery, mortality, pauperism, and some proportion of the crime in this country, we are already able to teach how, and to prevent small-pox, diphtheria, scarlet fever and typhoid fever. I believe we may now also add that most important of all diseases, consumption. 3. I would have, as one important part of the laws which all state boards of health should execute, thorough provision for the dissemination of all this knowledge useful for the preservation of life and health. The best methods which the highest social science can devise, should certainly be made available for this purpose. The best minds should devote their highest efforts and best energies, for years to come, to the subject of how to get to the people, who* 'are destroyed for lack of knowledge,' that knowledge which is able to save them from degradation and death. This, in brief, is my suggestion of how state boards of health *should* have 'executive powers.' According to my ideal, the State Board of Health is a grand power for the advancement of human knowledge, for the noblest of all purposes, the betterment of the physical, mental, and moral condition of all mankind. I believe that, 'knowledge is power.' How shall we best get the most of it? How shall we best impart it to all our brothers who need it? But I think the question which I have been asked to discuss has reference, also, to a subject quite different from the one I have been discussing. There is, in the minds of some people, an idea that state boards of health should be mainly great and powerful for the abating of some nuisance, dealing with nuisances, large or small, but nuisances which no local board of health has abated; nuisances, also, which no local board can abate; that the state board of health should have mandatory powers to compel obedience to its own views of public sanitation, to its own interpretation of public-health laws, many of which laws are enacted because of, and are based upon, results of investigations made by state boards of health. Is this desirable? I think it is not. I believe in local self-government. If the state board has to do the work of the local boards it cannot do much that it should do and which cannot be done by the local boards. I believe that we should teach the localities to take care of themselves, and if they don't do it, let them suffer."

The president asked Dr. Baker what he would do in cases where the disease had reached such dimensions that the local authorities could not control it.

Dr. Baker replied: "Such a case occurred in our state a year ago last winter and the state supplied the funds and the epidemic was stamped out. I regard that, however, as simply a make-shift and not a constant thing. That has occurred only once in the last seventeen years and in that instance we did what Dr. McCormack suggests—the state took hold and stamped the disease out.

Dr. Rutherford: "And wasn't it short, sharp and decisive?"

Dr. Baker: "It did not last a great while."

Dr. Lee: "If such an emergency were to occur more frequently would not you exercise the power the state gives you in this respect more frequently?"

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*Hosea: Chapter IV, verse 6.

Dr. Baker: "I don't know. The call for it has occurred many times over in another way. Small-pox is an insignificant disease compared with some others. We have lost many people by diphtheria and scarlet fever, yet public sentiment would not support any interference on the part of the state board in such cases, when it would in small-pox outbreaks. I am speaking on the general principles of the functions of State Boards of Health, as I have stated them.

Some one asked if the state board should not come in and say how the work should be done when the local authorities believe that they are doing all that is necessary, and are really doing very little at all.

Dr. Baker: "Our board has no mandatory powers. Recently there was an outbreak of small-pox at Meridian, and under the impression that it was chicken-pox, free mingling and riding on the cars was permitted. We do not wait for health authorities to notify us of outbreaks of diphtheria and scarlet fever, but search the newspapers. For where you will find one local officer that is prompt to report you will find many others that are not. What we do is, not to step in and stamp out the disease, but insist that they shall stamp it out; and if they do not, put the prosecuting attorney after them and try to find out why. We undertake to devise so that the local board shall do the work, and they do it after a while. They sometimes fail to do it, but when the people find that the state board will not go there, but that the local board is empowered to do it, they change their administration and have new officers at the next election. We find out about an outbreak from the newspapers and send a demand for a report. If it is not forthcoming we set the machinery in motion to compel it."

Dr. Lee said: "I have little to add to what has been said. It seems to me that the question has to be determined somewhat by the locality and the characteristics of the population. If you have a thoroughly well-ordered community, with the people accustomed thoroughly to self-government, then I say that self-government is the best, and that locality should be made to do the work. Where you have a community that understands but little of self-government, then it is absolutely necessary that the state board should step in. One feature of giving a State Board executive power, I think, is useful, and that is that it enables it to make a demonstration occasionally which will impress the community with its importance. If you rely simply upon the collection of statistics as the work of your board you will find that the people—at least we found it so in Pennsylvania—will be unable to appreciate this work and will not see the good of a lot of figures and statistics that they cannot understand, and the consequence is that you will very soon lose the popular support and probably legislative support. But if you can show them by occasional short, sharp and de cisive acts in the way of stamping out disease that the state board is a power, you impress them with the fact that it is worth while to continue the board and to give it substantial support."

Dr. Cochrane said: "I think the view taken by Dr. Baker is the correct one. You can understand that I believe it to be the right view when I tell you that it is the system we adopted years ago in Alabama in drawing up our health laws. We believe in the community taking care of itself, and I don't know of any teacher better than experience, but we allow the state to help the local boards without superseding them. If an outbreak occurs in a community not accustomed to it and the county health officer will telegraph to Montgomery for help, the state board will tell them what to do, they furnishing the means and agents to carry it out. In the case of yellow fever we might help them with money, for it might be beyond the means of the local authorities to do all that is necessary.

It is so easy to stop small-pox in Alabama that there is no need to call on the State Treasurer for funds. Every community furnishes money for itself, and practically the state would be called upon to contribute funds only in case of yellow fever. Dr. Baker's principle of teaching the people to help themselves is unquestionably the wise one, and when they are not able to, let the state help them with funds, but even then make the local board do the work. (A question—What if they will not help themselves?) Let them suffer. I don't shrink at all from the full consequences of the position I take. I say if a community want to suffer let them suffer, and if they won't act or insist on acting in such a way that their people will be destroyed, let them act so. Such people deserve no sympathy. Let other communities take care of themselves If Louisiana doesn't manage yellow fever in a manner that satisfies Alabama we will not try to take possession of things in Louisiana, but we go to our own borders and establish safeguards and let the communities take care of themselves; and I don't know of any disease in which a community is not able to take care of itself ordinarily. (A question—Do the local or state authorities enforce quarantine?) The local authorities. The state board may do it also. There is no likelihood of there being any collision between the state and local boards. The local boards are always willing enough to accept the suggestions and assistance of the state board, but the State Board of Alabama would have no power to supersede a local board if they desired to establish a local quarantine. We would have no legal power to set it aside. If we did not think it sufficient we might establish more efficient safeguards. Often they do more than they ought to, and usually there is more money spent foolishly in quarantine than in anything else. We have a good deal of power, but the state board has no absolute power over the local boards and cannot put itself in *sans ceremonie.* (A question—Have you too much power?) I don't think we have. I thnk we have all the power we want. I am unable to suggest an improvement in the Alabama health laws. Our plan is to have nobody connected with our health boards but doctors, and our plan practically makes every doctor in the state an agent of the state in these matters. Our state medical association is a state board of health, and our county associations are county boards of health. We make every man an officer, but we are dependent for money upon what the local communities choose to contribute. If we had more money we could accomplish more. Our local communities are often loth to contribute money, but all the same it is better to submit to these evils than to have a different system. Let the people learn to help themselves, to co-operate with the health boards and to take an interest in these matters. It is an education for them and it is better to let the local boards do the work than to put the state board in and let the state pay all the expenses and take all the responsibility. I believe in a people taking care of themselves. If they don't, let them suffer. You cannot push the principle so far that I will shrink from defending it. (A question—In the absence of co-operation of the local board has the state board the right to quarantine in your state?) Yes."

Dr. Lindsley said: "The gentleman has been discussing how much power the state board should have, but he has not said that it has none. Some have none. I agree with him that state boards should have conditional executive powers—executive powers in emergencies."

Dr. Bailey said: "Is not the state board a central board with all other boards dependent upon it for power, and is not what is done through local boards done through itself? I think the idea should be to give executive power to somebody and to hold somebody responsible. As an advisory council the state board is useless. Executive power is the thing and it is the best to make the local board the means of exerting that power. The state board should have absolute power."

Dr. Rauch said: "I am amused at this discussion. Dr. Baker, when he wants quarantine, applies to the United States Government. (Never did; from Dr. Baker.) Well, your state did, and Dr. Cochrane has the best system. I have had as much experience as any of you. Our state board controls quarantine and also the local boards, and it is well that it should be so. At certain times, localities in the state would quarantine against each other for business and not sanitary purposes, and I have broken up a number of that sort of quarantines. Local boards are not competent to judge of the conditions of other localities, and the state board should have the power to supervise."

Dr. Rutherford said: "So far as Texas is concerned she has no state board. I am the state board of health, and the declaration of quarantine is put at the border. They had two or three agitations at Marshall and Texarkana. I went to both places where I had a row with the authorities to prevent their quarantining against Shrevesport and other towns. I had to put police in Texarkana to keep the people straight. If you are going to do anything your force must be concentrated, and it must be in the executive officer of the state board of health."

Dr. Formento said: "I believe in the concentration of power in state boards, and let these boards delegate it to local boards in cases where it is deemed advisable. In Louisiana the state board of health has executive power in many respects. It can proclaim local quarantine against foreign countries without even the proclamation of the Governor. It has been given that power without even the necessity of referring the advisability of the matter to the Governor. I believe in people protecting themselves, but not when it is reduced to the questions of little towns and parishes. Some of our friends said, let them suffer the consequences, but it is not the ones who do not do right that have to suffer the punishment. Innocent parties become the victims of the wrong doing of health authorities. Local boards should have no power beyond abating local nuisances, but when it comes to questions of quarantine and disease the state board can handle the matter with more authority and prestige than can the local boards."

Dr. Rutherford said · "The gentleman remembers that the Shrevesport Board of Health put on quarantine in violation of the laws of Louisiana and maintained it with the shot-gun."

Dr. Salomon said: "They did for a few days and then took it off. It was a quarantine against neighboring states."

The President said: "The chair is of opinion that a man with a shot gun could do a good many things that others could not."

Dr. Bryce said: "All of us will endeavor to educate local boards into a position where they will be enabled to do much of the executive work that any board has to do. There are, however, a large number of subjects which in the progress of sanitation in a state must of necessity belong to the state board. Take for example the case of pollution of streams which do not remain in one municipality and which form the source of drinking water. They are contaminated in one locality, and suppose there is no state law against such action, what is to be done? Suppose there is a state law and the authorities above refuse to recognize it, what is to be done? Somebody will interfere. The authorities below will institute a suit and endeavor to secure an injunction against such contamination above, but this is a slow and expensive way, and ten chances to one that if the matter were in the hands of the state board it would be able to bring about the desired action without delay. It has been said that a local board may continue a nuisance to the detriment of its inhabitants and those of neighboring communities. A wise provision in our law gives us the power to require certain things of municipalities, and if they do not accomplish them we can send an officer to do the work and charge it up to the municipality. Our first duty is to protect the public—the public of a municipality even against its officers, but let the public who have neglected the matter pay for it."

Dr. Thompson said: "I am clearly of the opinion that the state board of health should have executive power. If they abuse that power let them be held responsible. If we did not have such power I do not know what we would do in Kentucky. It happens sometimes that such panics are produced by the action of local boards, as was witnessed last summer a year ago, when the outbreak occurred at Jackson. The railroads appealed to the Governor, and he having no power, referred the matter to the state board which has the power to establish quarantine on any of the borders, or on the Mississippi and Ohio rivers. The local boards have the same power in each county, but they have to report to the state board, which determines whether their quarantine shall remain. If the state board does not deem it necessary it can raise the local quarantine. On the I. C. railroad the towns would not let even a flat car pass. They got up a fuss at Paducah, and had it not been for the power of the state board the railroad travel would have been stopped indefinitely. We would raise the quarantine as fast as they put it down, and when they said they would put it down again as soon as we raised it, we told them we would hold the town responsible for action of that kind. As soon as the towns found that we could raise the quarantine as fast as they put it down, they quit. I do not believe that the public is aroused to the importance of quarantining against diphtheria and scarlet fever, and I don't think they are quarantined against as often as they should be. But I don't think anything alarms the people as much as small pox, yellow fever or cholera, and the people are rather too anxious to interfere sometimes. I cannot imagine a state board that would do injustice to any one in this respect, and I could not believe that they would not do everything necessary to protect the people."

Dr. Baker said: "It seems that we are laboring under some misapprehension. I tried to show that I believe that state boards should have executive powers, but I think we want to understand what that means. Of course we agree that the state board of health should execute some laws. What laws should they execute? It narrows itself down to this: Shall the state boards of health have the executive powers to execute laws of the state in the same general direction that the local boards do, or shall we have a state board of health that shall have other powers than those mandatory upon local boards? We have a board with mandatory powers in our state, but it is not like the board which they have in Louisiana or Texas. We have in our state an organization with entirely different functions, looking to a higher plane of work, and we call it a state board of health, and it no more does the work of the local board than the general in the army carries the musket. But the general is useful in planning the campaign, and has the authority to tell his men what to do. So the state board of health should have power and should direct the local boards what to do. That is my idea of a state board of health. Again, the state board of health can collect useful statistics, and the county boards cannot do that work. If you are fighting as a soldier you cannot perform the duties of a general officer."

Dr. Rutherford said: "Yet the power is crystallized into one man in the army, and so it is in the state in regard to health matters. That gentleman over there is the State Board of Kentucky.

Dr. Reeve offered the following resolution, which was adopted:

Resolved, As the sense of this Conference it is desirable that the executive officer of each state board of health should send to the executive officer and to each member of every other state board of health, copies of each of its annual reports, public health circulars or other publications, and also to furnish for the library of every other state board of health, a copy of each of the above named publications.

Dr. Homan offered the following resolution concerning the organization of local boards of health, which was carried:

Resolved, That the president of this Conference be instructed to appoint a committee who shall formulate a practical plan for the creation and organization of county and other local boards of health in the several states, the said committee to report at the next meeting of the Conference.

The president appointed Dr. Henry B. Baker, of Michigan; Dr. C. A. Lindsley,of Connecticut, and Dr. Benjamin Lee, of Pennsylvania, members of this committee.

The president said the executive committee thought an assessment should be made upon the different boards, sufficiently large to cover the cost of getting out the minutes and any outstanding indebtedness. Dr. Probst stated that $10 per board would be likely to cover all expenses.

Dr. Bryce moved that an assessment of $5, in addition to the usual assessment of $5, be levied. The motion was carried.

Dr. Lee introduced the following resolution, which was adopted:

Resolved, That the secretary be instructed to address a communication to the secretary of the bureau of health, or other appropriate health authority of the Island of Cuba and Mexico, inviting them to participate, either personally or by representatives, in our next annual Conference.

The election of officers for the ensuing year was entered into. Elections by ballot were decided upon. The vote for president was announced, showing Dr. McCormack to be re-elected. He made an attempt to decline, but the election was made unanimous.

Dr. Baker said that a better secretary than the one which had served the past year could not be gotten, and he moved that the Conference instruct Dr. Rutherford to cast the vote of the body for Dr. Probst as secretary. The motion was unanimously carried and acted upon.

The Conference adjourned.

TUESDAY, MAY 20—MORNING SESSION.

The Conference was called to order at 9:00 o'clock and presided over by Dr. Bailey, Dr. McCormack not being able to be present.

Dr. Plunket produced a boutonniere which he said a lady had given him to pin on a representative man of the Conference. He turned it over to the acting president who presented the same to Dr. C. A. Lindsley.

Dr. Bryce read the following paper on the "Preservation of our forests as a national sanitary need," with the request for a full discussion:

PRESERVATION OF THE FORESTS AS A NATURAL SANITARY NEED.

By Dr. P. H. BRYCE, *Secretary Provincial Board of Health, Toronto, Ontario.*

MR. CHAIRMAN AND GENTLEMEN: Says Madame Michelet, "Alas, in how many places is the forest, that once lent us its shade, nothing more than a memory! The grove and noble circle which so fittingly adorned the mountain is every day contracting. * * * Who will eloquently set forth their manifold mission, and their active and incessant assistance in the regulation of the laws which rule our globe? Without them it seems delivered over to the blind destiny which will again involve it in chaos. The motive powers and purificators of the atmosphere through the respiration of their foliage; avaricious collectors to the advantage of future ages of the polar heat, it is they, too, which arrest the progress of the sea-born clouds and compel them to refresh the earth; it is they which pacify the storm and avert its most disastrous consequences. In the low-lying plains, which had no outlet for their waters, the trees, long before the advent of man, drained the soil by their roots, forcing the stagnant waters to descend and construct at a lower level their useful reservoirs. And now, on the abrupt declivities they consolidate the crumbling soil, check and break in the torrent, control the melting of the snows, and preserve to the meadows the fertile humidity which, in due time, will overspread them with a field of flowers."

I might have quoted much more of the delicate yet comprehensive and vigorous description given by this accomplished writer regarding her friends, the trees and flowers, but we have in what has been given a text sufficiently comprehensive for me to base a sermon upon much longer than the time which is here allotted would permit. It is, however, upon two points which have been touched upon in the words quoted, that I propose here especially to dwell. One deals with the direct protective influences of forests, as regards human life, and the other the indirectly conserving influence they exert in preventing the drying up of our water-courses, whether surface or subterranean.

1st. The direct protective influence of forests on human life: Residing within the favored magic circle of the great lakes of 100,000 square miles in extent, and watching in the telegraphic despatches of the day the records of the cyclones and floods, with their accompanying horrors, which from time to time occur to the south and west, it has sometimes seemed to me as if I dwelt in a sea-girt island, secure as is that little ocean gem, separated from all external foes, which both you and I can look to as the parent of our race. Perhaps it has been this very position, within the periphery created by the great lakes, that has made me so sensible of the difference between our climatic conditions and those which have made Johnstown, Louisville and Akron horrors possible; and yet, as I have witnessed the work which, within a quarter of a century, has made the cultivated portions of Ontario treeless to the extent of seventy-five per cent., I tremble lest Scripture should be fulfilled in our case, and the sins of the fathers be visited upon the children, even to the third and fourth generations. It is not recently only that this question has engaged my attention, as that of many other observers, in the matter of its influence upon climate and rainfall; but it has been only recently that its disastrous effects on human life have made themselves strongly felt by me.

If, in barbaric days, the Greeks considered it unpardonable to cut down the olives in an enemy's country, it ought not to seem strange should we view with alarm the wanton devastation which has denuded the vast areas of Canada and the states east of the Mississippi of the bulk of their magnificent forests, and where, through carelessness, we are too frequently allowing generous nature's second gift in the new growth to go uncared for, to suffer similarly from the ravages of fire and cattle. That the total rainfall from any of our districts has not greatly altered in its annual amount seems tolerably well established; that its distribution throughout the year has been wholly changed, however, is indubitable.

The following summary of calculations, made by me some years ago of the rainfall at the Toronto Observatory, amply illustrates these statements:

Total snow and rain.

1840–44	216.57 inches.
1850–54	164.684 "
1860–64	160.387 "
1870–74	152.62 "

Or, between the first and fourth periods there was a total decrease of 63.95 inches, or a yearly difference of 12.79 inches.

The total moisture is divided as follows:

Total rainfall.

1840–44	191.020 inches.
1850–54	137.999 "
1860–64	131.706 "
1870–74	113.150 "

Or, between the first and fourth periods there was a total decrease of 77.87 inches, or a yearly difference of 15.35 inches.

Total snowfall (12 *inches snow*, 1 *inch rain*).

1840–44	322.70 inches.
1850–54	320.10 "
1860–64	344.38 "
1870–74	473.83 "

Or, between the first and fourth periods there was a total difference of 151.13 inches, or a yearly increase of 12.59 inches.

These calculations agree exactly with theory. In comparing the individual quarters of each period, I arrived at the following results: March has remained much the same; with April is found a decrease of more than half an inch, a decrease that increases with each month until September, thus:

	April, May, June.	July, August, September.
1840–44	48.55	68.101
1850–54	40.195	48.625
1860–64	32.742	45.617
1870–74	34.670	35.14

The significance of this unpleasant change must be evident to all. Further, the average temperature of the two months of germination is lower now than it was forty years ago. Thus:

	March.	April.	May.
1840–44	29.88°	42.62°	51.22°
1850–54	30.24°	40.06°	50.68°
1860–64	29.02°	40.80°	52.86°
1870–74	27.24°	40.18°	53.36°

This undoubted fact causes what is termed a late spring, the period for growth and development of the plant being shorter than formerly. The temperature of May, the first month of real growth, is now warmer than formerly, by an average of nearly two degrees. The growth is thus apparently forced unnaturally to make up for loss in April, but the attempt is rendered futile by an undue dryness, the rainfall in May having been:

1840–44	15.015	inches.
1850–54	13.675	"
1860–64	14.055	"
1870–74	8.640	"

Allow me to use these figures to illustrate the fact which, judging from what we saw during our long journey yesterday through the Kentucky and Tennessee valley, has made, I imagine, itself felt in the south as well.

If we endeavor to bring these figures into relation with the fact of the enormous destruction of our forest areas, the following conclusions seem to be established: By the month of March the rays of the crescent sun are beating more directly upon the snow-covered ground than is possible where there is a large tract of forest. Hence the snow melts much more rapidly away now than formerly. But much worse than this, the rapidly melting snows do not, as water, sink silently away, in large part into the leaf-mould and humus, which formerly covered the areas in the forest, and, pervious, absorbed as effectively as a sand dune will, the superincumbent waters. Thus the double evil is created, of rapid melting and rapid flowing away. Falling on bare hillsides even heavy clays are eroded, and water courses are formed which, swelling at every moment, rush to the creeks and larger streams, piling up the water in such a way as can only be appreciated by gentlemen who have lived along the lower levels of your Mississippis and your Ohios. Some of you must have seen sights similar to that I noticed as commemorated on the buttress of a ruined bridge over the Cumberland—high-water mark for 1882 being some forty feet above low level datum. Houses, lands, families desolated, and malaria reaches left behind, has been, and is to-day the Nemesis which Pan and his Dryads have decreed shall fall upon men who, with sacrilegious hands, have destroyed the sylvan temples and fanes consecrated to the worship of the shepherd god.

But nature, thus prodigal, like him of our scripture lesson, has, while rioting, rejoicing in her strength and freedom from winter's embrace, exhausted her substance, and the waters having run their wanton course, have left the hillsides ragged and bare to parch and bake, and to become as drear and still as Niobe, robbed of her children. Such, all of us recognize, as facts in those limited areas of country coming within our ken; but if one thinks for a moment that, with a rainfall in the month of March of say four inches, much of which may fall, in the north or in the mountains further south, on frozen ground, every three acres--over hundreds of miles of gathering ground on the mountains and slopes—is capable of yielding one foot deep of water, we can obtain a clear idea of what such must mean, heaped into the valley of the Cumberland within a few days, and how incalculable is the loss to what otherwise would be permeable beds, holding up their stores of water to supply through the thirsty summer, springs, bursting from the hillsides as messages, to those who will hear,of the limitless gifts of nectar which are to follow or can be gathered by those who seek after them. But there is much more than this. These more or less treeless surfaces become, during the long summer days, greatly elevated in temperature, and meeting atmospheres of other temperatures, set up disturbances resulting in water-spouts, cyclones, hail-storms, etc. Now, if we interpose the influence of a tree area, we find that the differences between ascentional currents over land and lake become less accentuated. Though the tree exposed to the summer sun does become elevated by solar heat, yet the rise is slower and never reaches that of the bare soil, for several reasons: First, the green foliage is not so good an absorbent of heat as, say, a dark soil. Second, since the tissues of the tree are full of sap, and since the specific heat of water is about four times that of the soil, the sap will not rise in temperature so rapidly as will the soil. Third, on account of the circulation of the sap successive volumes of water are being presented to the sun's influence in the leaves, but as the rapidity of circulation is increased with the heat, and as the sap coming from the deep earth must have a comparatively low temperature, the elevation of the whole volume of sap will be necessarily slow. Fourth, the much greater evaporation taking place from the leaves of the tree than could from the area of soil covered by it, creates a coolness of the surrounding atmosphere by the increased evaporation. This cooler and more nearly saturated atmosphere surrounding the tree intercepts the rays of the sun, and acts in the double capacity of a blanket and a parasol.

Now, reverting for a moment to the soil beneath the tree, we at once see that, protected from the sun its pores will remain open to absorb the soakage water received into the numerous interstices of the leaf mould lying on the surface. Once into the soil, kept friable by the mulching of the surface and the penetrating roots, the waters follow along or are absorbed by the spongioles, and often impermeable clays are pierced by these roots reaching out for food, and the waters allowed to filter downward into some bed of sand and gravêl, and so add to the water-stratum or supersaturated layer of permeable soil, which dipping more or less along the underlying rock, often becomes the unlimited source of artesian water supply to cities or towns hundreds of miles distant, in the direction of the dip of such rock strata.

I have now reached the other point I proposed to refer to, viz:

Second. The indirectly conserving influence the forests have in maintaining the permanency of springs and deep water courses. The mode by which an aggregation of trees acts in retaining the rains in the places they have fallen has already been explained, but I shall do little more than indicate the extent of this. Hofmann tells us that in an ordinary subterranean water-stratum the movement of the water along in the direction of the dip of strata is not much more than a metre a day. Apart from gravity the same rate would prevail in an upper permeable stratum, if saturated, but saturation of dry soil is a slow process. A clay will hold seventy-five per cent. of its own volume of water; a sand twenty-five to thirty-five per cent. Now, water falling upon an upper permeable bed descends till, meeting a harder stratum, it follows the line of descent. There it crops out on the hillside, or following the dip passes under an impervious bed of clay, which, tapped by a boring, may ascend to a considerable extent or even the whole of the length, or higher, of the pipe.

Should, through the absence of trees on the upper gathering ground of such strata, a large portion of the annual rainfall flow off the surface and not be retained, it needs no prophet to predict what will be the future fate of such a source of public water-supply if largely drawn upon.

How important its preservation becomes is manifest from two considerations: 1st. That owing to the facts already stated, the streams, after the spring floods, are so rapidly reduced in volume as to yield most uncertain supplies where creeks are impounded, while at the time that their volume is being so greatly decreased, the growth of urban populations tends constantly to increase the impurities in streams which are used for public water-supplies. These facts are slowly forcing themselves upon the attention of our towns and cities, but when it is remembered that from Cincinnati, southward, turbid river waters are supplied to the cities, it becomes apparent that practical knowledge in regard to underground sources of water-supply is yet limited. On the other hand, when it is remembered that in the statistics of public water-supplies, as given by a New York engineer, over fifty per cent. of the public waters are pumped from wells of some sort or other, it is apparent that the subterranean waters will be, in future, much more than the superficial, the source to which we shall look for our drinking water. This for three reasons: 1st. Because of its absolute biological purity. 2d. Because, when drawn from deep borings it maintains a great constancy of supply. 3d. Because, if conserved at the base of supplies by forests on the hillsides and uplands, there will be more of it than in open channels on the surface over the same area.

Now, gentlemen, what practical application can this Conference give to these facts, stated in the most partial and fragmentary way? We have seen the devastating effects of winds sweeping over treeless prairies, and of mountain torrents rushing unchecked, sweeping away the unsuspecting inhabitants below; we have seen the decline in the summer levels of streams, and in the increase of the streams' pollutions; and we behold the almost universal demand in all the territory inland from our great lakes for water from subterranean sources. We cannot ignore the fact that in this, as in all sanitary matters, no national confine or 49th parallel, no state line and no municipal boundary can limit to any extent malign influences due to general causes far-reaching in their operation. Why it should have been we know not, but so the Almighty has ordained it that in this matter the north shall give unto the south; that far to the north in the swamps of Minnesota and other western territories, the Father of Waters is born, as mountain streams—

> "Which, swift or slow,
> Draw down Æonian hills, and sow
> The dust of continents to be,"

receiving its tribute from those streams, followed by our LaSalle as the thread through the labyrinth which could bring him to the light, fed by those now turbid floods of La Grande Rivière, rising high in many a shorn gulch of the Alleghenies, endangering the commercial life of Cincinnati, Louisville and other towns, and, later, nurtured by your own Cumberland, amongst many others, at times a minister of peace, and again as the personification of the spirit of evil. But whether these foes are without or within, they are all still of one household, and it surely is a matter of national solicitude, of state concern and of individual interest, that the strongest possible representations be made through the press, and by forwarding resolutions and using personal influence with legislatures, national and local; with bodies, commercial and scientific, with a view towards initiating, as in France, in Germany, in Austria, in England, in India, and in Australia, some broad and comprehensive scheme for nationalizing all the territory of the great water-sheds, of appointing with extended executive powers, federal and state forest officers who shall survey the whole areas, lay out reservations where needed to protect valleys and their towns and cities, and for encouraging and extending the work already initiated by many intelligent and progressive agriculturists, that of a general tree-planting and cultivation. Why should we not see on this continent the adoption of what has elsewhere become a source of national and individual wealth, of common pride and general safety—tree-planting as a science, an art, and as a pastime?

Dr. Formento discussed the paper as follows: "I think the question Dr. Bryce has discussed is one of vital and national importance, and we are all familiar with the terrible cases of inundation which have resulted in a great measure from the cutting away of the forests in the north. From a sanitary and humanitary point of view I think it is important that this Conference should take some action with regard to this subject, and after the discussion is over I shall propose a resolution embodying such views as I think proper."

Dr. Plunket said he thought the whole Mississippi valley needed some action on this subject, and he moved that a committee of three be appointed to formulate some resolutions bearing upon the subject. The motion was carried and the chair appointed on the committee Dr. Bryce, Dr. Formento and Dr. Plunket.

Dr. Lee said: "I wish to express the great gratification with which I have listened to this paper. We in Pennsylvania have suffered probably as much as any other state in the country from the denudation of our hills and the destruction of our forests. It has gone on in the Alleghenies to a most frightful extent, and the results have been only too patent in the floods of the last two or three years. The possibility of the production of cataclysmal downfalls of water from the clouds in place of the usual rains, by the exposure of large surfaces which should be covered by forests is well known, but there is one point which is suggested by the paper that has not been so generally brought out, and that is the fact that these denuded surfaces are the cause of disastrous cyclones and movements of the atmosphere. This is an important point and one which is comparatively new. I would suggest that individual members of the Conference may do much by encouraging forestry associations in their respective states and communities; and I think every member of this Conference should be a member of a local forestry association, and do all in his power to promote its objects. It may not be known that the congress of the United States has this subject at present under consideration, and that a special committee of forestry, which is a sub-committee of the committee on public domains, has the matter in charge. There is a bill before congress looking to the protection of forests on our public lands. If this subject is not referred to in the resolution offered by the committee, I will ask leave to introduce a supplementary resolution bearing upon it.

The secretary read a letter from Dr. Young, resigning the chairmanship of the Committee on Codification of State Health Laws.

Dr. Lindsley moved to accept Dr. Young's tendered resignation, but Dr. Rauch said that Dr. Young was a good man for the work, and would probably report with a little encouragement, and the motion was withdrawn and the committee continued.

Dr. Fisher, of the Committee on the Collective Investigation of Diseases, stated that no member of the committee had found time to give to the preparation of a report, and that the disposition of the committee rested with the Conference.

The committee was continued.

The report of the Committee on Vital Statistics, by request was held over.

The secretary read a communciation from Dr. Young, in reference to the time of meeting, which was, on motion of Dr. Rauch, laid on the table.

Dr. Ruggles read the following resolution from the State Board of California:

Resolved, That it is the sense of the California State Board of Health that, for the better promotion of sanitary science in these United States, the meeting of the Conference of state boards of health be amalgamated with the meetings of the American Public Health Association, as part of said association. The cost of attendance upon both meetings, as now ordered, being a burthen which distant states are unable to meet, owing to the lack of funds placed at their disposal for such contingencies, and that our delegate be instructed to advocate and support the said resolution before the Conference adjourns.

Dr. Rauch said, "To the older members of the Conference the question raised is a familiar one, and would result in trouble. The same action should be taken with it as with Dr. Young's paper."

Dr. Bailey said, "The action of the last Conference practically disposed of the matter."

Dr. Salomon said: "The question had been fully discussed at previous meetings and could only lead to a long discussion. I think we can safely trust the time and place of the meeting to the executive committee. They might call a meeting previous to either the American or Public Health Association. I think the committee is competent to exercise its discretion in regard to that, and the Conference can always have its meeting a day or two in advance and independently of the others. As for amalgamation that is out of the question."

Dr. Ruggles said: "In introducing this resolution I am acting under instructions. It has not been my privilege to attend this meeting before, and if this is the largest that you have had, I am certainly sorry to see the absence of so many prominent states. I had hoped to see a delegation here from Massachusetts, which is my native state, but there is none, and if we from the Rocky Mountains are here there are other states that ought to be present, and if interest could be increased it should be done by some means. It was suggested at the last meeting of the American Public Health Association that a certain section devoted to state medicine could be organized, and this body could occupy that. If this is an increase on the past it is hoped that the future will be better. If the state boards will unite, California will be here every time."

Dr. Ruggles' resolution was received without action.

Dr. Bryce offered the following resolution, prepared by the Committee on Forestry:

Resolved, That, recognizing the well-known evils resulting to the whole nation from the disastrous floods which within recent years have taken place along the valleys of our great rivers, and from the destructive cyclones which, from time to time, occur, both of which evils have been pointed out to be due mainly to the cutting down of the forests on the mountains and along the hillsides where our great rivers take their origin, and to the violence which the winds-storms obtain blowing over great tracts of practically treeless prairie, this National Conference of Health Officers desires most earnestly to bring these evils to the attention of our Federal Government, our state and provincial legislatures, and other scientific and commercial bodies, urging them to take such comprehensive action as will (1) cause a survey to be made of the gathering grounds of our great rivers. (2) Preserve, and replant when necessary, these areas, with protective forest trees. (3) Establish schools whereby the principles and practice of forestry will be taught, and protect by the most stringent legislation the results of the above-mentioned work. (4) Make recommendations to our towns and cities to form park associations, for the planting of trees and obtaining possession of waste lands to be gradually reforested.

(Signed) P. H. BRYCE,
F. FORMENTO,
J. D. PLUNKET.

The resolution was adopted.

Dr. Lee offered the following supplementary resolution which was adopted:

Resolved, That this Conference respectfully urges upon the sub-committee on Forestry of the Committee on Public Domains of the Congress of the United States, to pass such laws as shall check the reckless destruction of trees on the public lands.

On motion of Dr. Salomon, the secretary was instructed to forward a copy of the above resolutions to the congressional sub committee which had the forestry matter in charge.

Dr. Formento exhibited a plan which the Louisiana State Board had adopted of fumigating vessels with all danger of fire from burning sulphur removed, by means of generating sulphur gas, and made the following remarks:

"I thank the Conference for its expression of confidence in the Board of Health of Louisiana. I beg leave to say that our board appreciate their sentiments, and to assure the Conference, with all due modesty, that the Louisiana Board is worthy of their support and confidence, being composed of prominent physicians and citizens having but one ambition—the promotion of public health of their own state and of the whole Mississippi valley. All their efforts will tend to secure one common object, and to establish relations of harmony and friendship between the board of health of adjoining states. We consider our first and foremost duty to be to keep out foreign pestilence, yellow fever particularly. We have at our command an admirable system of quarantine, combining the scientific principles adopted and endorsed by the highest sanitary authorities. 'Holt's Maritime Sanitation,' with such improvements as time and experience have suggested, and will suggest in the future, is the system of quarantine strictly and impartially enforced by our board; our main factors for the disinfection and fumigation of ships, their cargoes, crews and passengers, are heat, dry and moist—bi-chloride solution and sulphurous acid gas, with a reasonable period of detention (five days) not too hard on commerce. All avenues, whether by land or water, will be diligently guarded."

Dr. Lee said that he felt that local boards who are doing their best to handle leprosy should receive the support of the Conference, and at the risk of being considered a nuisance would offer the following resolution:

Resolved, That it is the sense of this Conference that all state and local boards of health should keep all cases of leprosy existing in their respective districts under surveillance, and should require physicians to report all cases of the disease which may come to their notice.

The resolution was adopted.

The Conference adjourned its sixth annual session.

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2. PROCEEDINGS OF THE SECTION ON STATE MEDICINE, AMERICAN MEDICAL ASSOCIATION.

The sessions of this section of the American Medical Association were held on the afternoons of Tuesday, Wednesday and Thursday, the 20th, 21st and 22d of May, in the lecture room of the Vine Street Christian church in Nashville. The daily attendance was large, and among which was regularly to be seen many of the "strong men" of the association. This, coupled with the fact that state medicine was given such prominence, not only in the address of the retiring president of the association, but in other leading addresses delivered before that body, indicates the interest which is being developed in the professional mind regarding "the coming medicine," and in every way offers substantial encouragement to the pioneer health officers, who, though everywhere overworked and underpaid, have up to now made here in America a fight against ignorance and too often professional prejudice, that subsequent generations cannot but admire.

The deliberations of this section were presided over by its duly elected chairman, Dr. John B. Hamilton, Surgeon General of the United States Marine Hospital Service, and since "the peculiar relations which this governmental bureau bears to the public health of the country" are such, it may not be uninteresting to you to know something of its work in this connection during the past twelve months. From his address I extract the following:

"The work of the Marine Hospital Bureau in public health matters during the year has been confined to increasing the facilities at the different quarantines for treatment of vessels, the publication of a weekly abstract of sanitary reports, with which most of you are familiar, and the increasing of the facilities for laboratory work. There are two laboratories now fitted up with ample appliances for bacteriological work. One of them is intended for a general hygienic laboratory, and is at present located in New York. It is greatly desired that this laboratory shall be removed, at no distant day, to the national capital and placed in a suitable building, where its usefulness may be greatly increased and its work conducted under the more immediate supervision of the bureau. The other laboratory has been established at the Key West quarantine station, on Tortugas Key. It is intended that the questions connected with the etiology of yellow fever shall be assigned to this laboratory, while the one at New York is for general work. Special investigations have been conducted at the New York laboratory on the hot air treatment for pulmonary phthisis, a detailed account of which was published in the Abstract of Sanitary Reports for September 6, 1889; on various sources of infection in surgical wards; on specimens that have been referred to the laboratory from different stations, and the careful investigations of the cases of malarial and enteric fevers occurring at the Marine Hospital in New York, for the purpose of establishing the presence of plasmodium malaria in the blood, and of the bacillus of Eberth in the spleen or intestinal canal. In the latter investigation Dr Kinyoun gives the following conclusions:

1. Malarial and enteric fevers are not antagonistic to each other.
2. A differential diagnosis between the two diseases is sometimes impossible.
3. There exists a mixed form of infection which can be diagnosed by means of bacteriological and microscopical examination.

An interesting observation as to the therapeutical effect of cobra poison is now going on at the laboratory. The origin of this investigation is as follows:

A little over a year ago Dr. Peroux, of Calcutta, wrote to the bureau, stating that the natives in India were in the habit of treating cholera in its commencement with minute doses of a substance which proved to be cobra poison, and that the treatment had proved to be pretty generally successful. This statement was made with a request that the government would investigate the matter with a view of ascertaining the action of cobra poison on the cholera bacillus. After some difficulty and the lapse of some time, a considerable quantity of the poison was procured and is now being examined. The experiments are not completed, but Dr. Kinyoun has informed me that the cobra poison, in a very minute quantity, is a germicide of extremely high power, and that it is fatal to the development of cholera germs. Careful experiments are now going on, and he hopes to be able to make a complete report on this subject by the close of the present fiscal year."

Following the delivering of the address of Chairman Hamilton came the "Report of the Committee on Meteorology;" instead, Dr. N. S. Davis, chairman of committee, substituted a paper on "The Meteorological Conditions and their Relations to the Epidemic Influenza and Some Other Diseases in Chicago during the six months ending March 31, 1890," with the conclusion that the causation bore a close relationship to, if not identical with, that of epidemic pneumonia and catarrhal affections of the mucous membranes generally, and not to a microorganism, as the failure to identify such as its essential cause is presumptive proof, especially since the epidemic occurred at a period of greatest activity of microscopic research.

Dr. H. B. Baker, of Michigan, president of the American Public Health Association read an elaborate paper upon "The Causation of Influenza and Some Allied Diseases, with Suggestions for their Prevention." He held the opinion that epidemic influenza is the same as ordinary influenza, is not dependent upon contagion or infection from person to person for its spread, but is the direct result of natural and atmospheric conditions, chiefly a high followed by a sudden change to low temperature. The discussion of the two above named papers was exceedingly interesting and unusually full. Space forbids that I should more than state the fact.

"Government Aids to Public Health," by Dr. Walter Wyman, U. S. Marine Hospital Service, was next read by the secretary of the section, Dr. Francis S. Bascom, Salt Lake City, Utah, Dr. Wyman not being present at the meeting.

Dr. W. C. Towns, by permission, read a paper on "The Adaptability of Chattanooga as a Health Resort."

The substance of a proposed paper by Dr. J. Berrien Lindsley, on "Our Urban African Population," was stated, and, upon motion, he was requested to write out the paper and send to Committee on Publication.

Dr. F. G. Horn, of Colorado, read a paper on "Advantages and Disadvantages of High Altitudes."

Dr. Frank Billings, of Chicago, while holding the MSS. of a lengthy paper on "Preventive Inoculation" in his hands, verbally stated, in his usually energetic way, a few of its more important points, when it was referred to the Publication Committee.

"A Comparison between Our College Work and that of European Medical Schools, with some thoughts on Free Trade in Medical Diplomas Manufactured Abroad," was the title of an interesting paper by Dr. S. O. L. Potter.

After the election of the following officers for the ensuing twelve months, the section adjourned: Chairman, Dr. J. D. Plunket, Nashville, Tenn.; vice-chairman, Dr. C. A. Ruggles, Stockton, Cal.; secretary, Dr. Francis S. Bascom, Salt Lake City, Utah.

All of which is respectfully submitted.

BENJ. LEE, M. D.

3. PROCEEDINGS OF THE TRI-STATE SANITARY ASSOCIATION.

HELD AT WHEELING, WEST VA., *February* 27 *and* 28, 1890.

Officers and programme.
Water, by Dr. R. Harvey Reed.
The After-Dangers of Floods, etc., by Dr. E. D. Payne.
Immediate Disinfection of Débris of Floods, by Dr. M. Howard Fussell.
The Sanitary Surprises of the Flood of 1889, by J. B. Kremer.
The Destruction of Forests the Chief Cause of Floods, by Dr. C. F. Ulrich.
Emergencies, by Dr. A. J. Graham.
Some of Johnstown's Lessons, by Dr. Benjamin Lee.
Some of the Things We Eat and Drink, J. A. Myers.
Flood Débris Dangerous to Health and How to Dispose of It, by Dr. S. M. Free.
Sanitary Jurisprudence, by J. B. Sommerville.
Coöperation Between Boards of Health and the Temporary Authorities in Sudden Emergencies, by A. J. Moxham.
Experiences in Sanitary Work, by Dr. G. W. Wagoner.
Floods as they Affect the People of South Carolina, by Dr. W. D. Clinton.

OFFICERS.

President, Dr. Harvey Reed, Mansfield, Ohio; first vice president, Dr. Benjamin Lee, Philadelphia, Pa; second vice president, Dr. C. F. Ulrich, Wheeling, W. Va: third vice president, Dr. Byron Stanton, Cincinnati, Ohio; secretary, Dr. George I. Garrison, Wheeling, W. Va.

PROGRAMME.

THURSDAY, FEBRUARY 27, 1890.

First Session, 9:30 A. M., *Central Time.*

Miscellaneous Business.
"Emergencies," Dr. A. J. Graham, Peoria, Ill.

"Ultimate Dangers to Health from Floods and the Measures for their Prevention," Dr. E. D. Payne, Towanda, Pa.
"Disinfectants and Disinfection," Dr. J. B. McGrew, Pittsburgh, Pa.

Second Session, 1:00 P. M., *Central Time.*

"The Effects of Floods upon Washington County," Dr. C. W. Eddy, Marietta, O.
"The Immediate Disinfection of Débris in Flooded Districts," Dr M. H. Fussell, Manayunk, Philadelphia, Pa.
"Sanitary Surprises of the Flood of 1889," Mr. J. B. Kremer, Harrisburg, Pa.
"The Co-operation between Boards of Health and the Temporary Authorities developed by Sudden Local Crisis," Mr. A. J. Moxham, Johnstown, Pa.

Third Session, 7:30 P. M., *Central Time.*

Address of Welcome, Charles Burdett Hart.
"Some of Johnstown's Lessons," Dr. Benjamin Lee, Philadelphia, Pa.
"Some of the Things We Eat and Drink," Prof. John A. Myers, Morgantown, Pa.
"The Destruction of Forests one of the Chief Causes of Floods," Dr. C. F. Ulrich, Wheeling, W. Va.

Fourth Session, 9:30 A. M., *Central Time.*

FRIDAY, FEBRUARY 28, 1890.

"The Effects of the Floods of 1883 and 1884 on the Health of Cincinnati," Dr. Byron Stanton, Cincinnati, Ohio.
"Injurious Effects of Flooding Cellars and Grounds Beneath Dwelling Houses and Methods of Relief," Dr. G. C. Ashmun, Cleveland, Ohio.
"Sanitary Jurisprudence," Hon. J. B. Sommerville, Wheeling, W. Va.
"Dangerous Flood Materials and How to Dispose of Them," Prof. Spencer M. Free, M. D., Beech Tree, Pa.

Fifth Session, 1:00 P. M., *Central Time.*

"The Sanitary Condition of Houses After Being Flooded; the Diseases that Follow their Occupancy in Certain Localities," Dr. John McCurdy, Youngstown, Ohio.
"Water," Dr. R. Harvey Reed, Mansfield, O.
Reports of Committees or other business.
Adjournment.

PRESIDENT'S ADDRESS—"WATER."

By R. HARVEY REED, M. D., *of Mansfield, Pa.*,

City Health Officer, Mansfield, Ohio; Member American Public Health Association, American Climatological Association, American Medical Association, British Medical Association, National Association of Railway Surgeons, Ohio State Medical Society, Honorary Member D. Hayes Agnew Surgical Society, Philadelphia; Texas State Medical Association, Texas State Sanitary Association, etc.

I trust the members of the medical profession will pardon me for directing my attention to the people instead of my professional peers in the preparation of this address.

My only excuse is that I take it for grnanted that there is not a doctor in this audience who does not know as much about this simple subject as I do, while the people, you must remember, have not had either the time nor the opportunity to study the problems that cluster around the water they drink, and which play such an important part in their health, long life and prosperity.

Geographers have long since informed us that about three-fourths of the earth's surface is covered with water, while physiologists tell us that about sixty per cent. of the human body is made up of the same compound of oxygen and hydrogen.

I believe it was Landois who said water is of the utmost importance in the economy, and it is no paradox to say that all organisms live in water; for though the entire animal may not live in water, all its tissues are bathed by watery fluids, and the essential vital processes occur in water; a constant stream of water may be said to be passing through organisms," and hence it hath been truly said that "the most important substance used as food is water."

We have now two general axioms before us:

First. That nature has furnished us with an abundant supply of water.

Second. That in our physical organization, water holds the controlling stock.

From this it would be reasonable to argue, on the basis of supply and demand, that if the wants of our system are large, and nature's supply very greatly in excess of this demand, that we should have very little to worry about.

But the chemist comes up and tells us that water is not only a powerful, but general solvent, that it dissolves to some extent nearly everything with which it comes in contact, so that it is never found chemically pure in nature.

Even rain, as it falls through the atmosphere, dissolves and washes out the particles of dust and organic matter that are constantly found floating in the air; it absorbs the oxygen, carbonic acid, ammonia and nitrogen in its descent from the clouds to the earth; hence we speak of the freshness of the air after the grateful summer shower.

Our farmer friends often brag of the purity of their springs; yet these are all modified by the character and constituents of the soil through which their supply percolates on its way to these natural fountains; the same may be said of wells which are only artificial springs and are governed by the same laws.

Rivers play an important part in the continuous forces that join the oceans below to the clouds above, yet their waters are subject to the same laws of dissolution and absorption as the former; and thus we might go on from the lakes to the ocean, the ocean to the clouds, and from the clouds back to the ocean again, seeking for pure water, until wearied and disgusted, we exclaim with the Psalmist of old, "There is none of them good; no, not one."

But I hear some one ask, if all this is true, how does it come that we have been drinking water from some of these sources for years and years and are still alive?

I answer, simply because you have not imbibed enough of these impurities to kill you; or, perhaps you have been blessed with a constitution sufficiently strong to eliminate them from your system as fast as you have forced them upon it.

Again, a water may be far from being chemically pure and yet not be dangerous, or even injurious, to the human economy.

Then the question follows, What kind of water is injurious, and what kind is not?

I will answer the first proposition of this question by saying that all waters containing decomposed organic material are injurious, and the more they contain the more dangerous they are; again, waters containing certain minerals, such as salts of lead, mercury, antimony, arsenic, etc., are injurious, and if they are contained in any quantities they are even dangerous.

To the second proposition of the above question I will answer, that pure distilled water stands *par excellence* above all; next to that, boiled rain or spring water, then follows ordinary pure rain water, good spring or deep well water, from uncultivated soil,or insoluble rocks, such as granite, quartz or spar.

You will observe that we have not included the so-called mineral waters, which usually contain the salts of magnesia, soda, iron, sulphur, etc., and with the exception of these may be very pure; for the reason that such waters belong to the domain of the therapeutist, whose duty it is to prescribe them according to the disease of the patient; for it is not supposed that any healthy person wants to be continually taking medicine, whether in the form of a mineral water or pills, and especially in a food, which constitutes sixty per cent. of his whole physical organism.

In going back to the first axiom, it may seem somewhat paradoxical when I say that usually a city's water supply is one of the most perplexing problems the city authorities have to deal with.

The fact that it requires sixty per cent. of water as compared with all the food taken to complete and keep in a healthy condition the human economy, saying nothing of its multiplicity of other uses, demands that this supply be not only bountiful, but of the purest character possible.

On this fact depends a city's health, and to a certain extent its low mortality, both of which are prime factors in the prosperity of a given commonwealth.

Wells sunk in a city, no matter how pure they are at first, or how deep they penetrate the earth, are bound to become contaminated in time with organic matter; and are, not only correspondingly injurious, but absolutely dangerous, whether they reach rock, or only penetrate the soil or clay above.

The soil of any city soon becomes an immense mass of organic filth; sewage of all kinds penetrates it as water does a sponge, until wells which, when dug, were in the country and yielded a bountiful supply of good, wholesome water, when surrounded by a city become simply the receptacles of percolations through this mass of organic filth and corruption; especially is this true in cities using the old-fashioned privies for their "night soil," in which cases the original and previously harmless soil is perforated like the lid of a pepper box, with these intolerable slums of seething corruption, from whose foul receptacles ooze with every rain the juices of these sickening masses, befouling the soil wherever they touch, until they find exit in the wells of the city, because they are deeper than the former, and thus by the law of gravitation are the natural outlets for all this liquid filth.

Even wells drilled deep in rock are not exempt from this source of contamination. I remember a case occurring in my own city where a family was being severely afflicted with typhoid fever. Inquiries were made as to the probable cause; the well was suggested. Oh, no; it could not be that; they had the finest water in the city; their well was deep, and nearly all of it in rock; their water was crystal clear, had a delicious taste, and was beyond suspicion. It was finally decided, however, to pump it dry, and go down in it and see if it needeed cleaning.

When this was done nearly a foot of slimy "night soil" was found in the bottom of this same well, whilst from a crevice in the rock was found a constant stream of the same, busily keeping up the supply from a large privy some seventy-five or one hundred feet distant, which vault was driven into the same strata of rock, whilst the solutions of this "night soil" had found their way, through the laws of gravitation, into this well, even carrying with them much of the solids to this receptacle, thus contaminating what was supposed by the family to be the "purest water in the city."

There is not a city in our land in which this or similar cases cannot be multiplied by the scores.

Nor do the cities stand alone in the pollution of wells. Only a few days ago I was called in counsel with a neighboring physician, whose practice was chiefly in a rich farming district among the "Richland Heights," to see a case of typhoid fever. When I arrived at the house I found that out of a family of seven all had been sick with typhoid fever, with one death, and the last member of the family was not expected to live (and has since died) with this terrible disease; besides the suffering they had endured, saying nothing of the risks of life, in addition they had lost an aggregate of over sixty weeks of valuable time, saying nothing of doctors' bills and associate expense.

I had been called in counsel with the same physician in the same family when the first case of this series of typhoid fever cases broke out, and made a sanitary survey of the premises, with a view to discovering the cause.

They lived in a healthy farming district, among the hills, with ordinary farm surroundings, with a dry yard, cellar and house. There had been no typhoid fever in the neighborhood for miles around; but I found a shallow well, which the family bragged on for its excellent quality of water; and when its virtue was even suspected, they at once avowed its innocence, and argued that they had used its water for years, and they had had no trouble of this kind before, and besides, "it was the finest water in that neck of the woods."

On examining the surroundings of the well, I found a smoke-house close to the well, under which the chickens had roosted, whilst a short distance from that was a chicken-house, with an earth floor which was covered with hen manure, and beyond that was a garden which was heavily manured every spring; all these lay in close proximity to this well, and in a favorable position for drainage into the same.

An unusually wet season had favored the percolation from these various sources in finding their way into this well; the water of which contained large quantities of chlorine, showing the presence of organic matter, also large quantities of free and albuminoid ammonia.

I condemned this water as unfit for use; but my warning was not heeded by the family in time, and the result was a terrible scourge of continued sickness, with the loss of a mother and a son, besides over sixty weeks of time lost and other expenses, before they had atoned for the violations of the sanitary code.

I could multiply these cases by the scores resulting from both springs and wells of this or any other county in our state, were such necessary; but it would be useless to waste your time and weary your patience with such repetitions when a word to the wise ought to be sufficient to convince you of the dangerous character of well and spring waters, when subject to pollution from organic filth, which depth does not guard against, as was proved in the case of the Ludlow-Lane well, near Liverpool, England, which was 443 feet deep, yet was fouled by percolations from cess-pools.

We will now turn our attention to the next most frequent source of water supply to cities—the rivers and lakes.

If wells are fouled under circumstances much more favorable for a pure water supply, what must be the water supply from our rivers, which are used as the natural sewers for all sorts of the foulest of the foul of organic filth!

Ah! but some one says that running water purifies itself. Don't you believe it. The old theory that "filthy water becomes pure by running over half a dozen pebbles," has long since been proven false, and without foundation.

It is true that organic filth, whether in solution in a running stream or elsewhere, gradually oxidizes, and to a certain extent loses its poisonous character; yet this oxidation is so slight as compared with the immense quantities of organic matter dumped into our rivers from all sources, that it cannot under any circumstances be relied on for safety, from a sanitary standpoint.

Just imagine the Mississippi river purifying itself, when eight cities alone dumped 152,675 tons of garbage and offal, besides 108,250 tons of "night soil," and 3,765 dead animals into this open sewer in one year; or the Missouri river, when only four cities furnished its waters with 36,000 tons of garbage, 22,400 tons of "night soil" and 31,000 dead animals in the same length of time. Oh! what a delicious decoction of organic filth with which to slake the thirst of mortal man and breed pestilence and disease!

In referring to the above pollutions of the Mississippi and Missouri rivers, Dr. Kilvington, of Minneapolis, says: "No theory of self-purification of running water will dwarf the magnitude of this sanitary crime"

Follow the Mississippi river from its source in Lake Itasca to its delta in the Gulf of Mexico, and count the cities and towns that have multiplied along its banks and estimate their aggregate population, each one of which use this for their natural outlet for all their filth—saying nothing of the refuse from the thousands of boats that traverse this great water-course—and then estimate its utmost capacity of purification, and you will soon be engulfed in a sea of the darkest sanitary despair.

The same may be said of all our thickly populated rivers, where the cities and towns above furnish their neighbors below with a daily supply of the foulest of their filth; while the cities and towns below have been, and are still drinking of this diabolical mixture, with only here and there a sanitarian to molest them or make them afraid.

For an example of the results of this awful sanitary crime, I need only refer you to the terrible epidemic of typhoid fever which occurred to your next-door neighbor (Bellaire) only a few years ago.

In the report of the Rivers' Pollution Commissioners on the Domestic Water Supply of Great Britain they say:

"River water, usually in England, but less generally so in Scotland, consists chiefly of the drainage from land which is more or less cultivated When it is further polluted by drainage of towns, and inhabited places, or by the foul discharges from manufactories, its use for drinking and cooking becomes fraught with great risk to health; a very large proportion of the running waters of Great Britain are either at present thus dangerous to health or are rapidly becoming so."

The truth of the above findings was proven true in the "Queen City of the West" only a few years ago, which paid the penalty of drinking polluted river water by the deaths of scores of her inhabitants from typhoid fever, and hundreds of cases of continued sickness from the same disease.

In our own city we paid the penalty of our sanitary sins, while we supplied our city with water from a filthy creek which ran near by, by numerous deaths from typhoid fever annually, together with scores of cases of sickness, with all their suffering, loss of time and unnecessary expense, from this same cause.

But since we have supplied our commonwealth with water from ten deep artesian wells (drilled in an unpopulated tract of land just north of our city), whose fountain head is believed to be in the Allegheny mountains, and whose purity, after repeated chemical analyses by our state and other chemists, has shown our water supply to be exceptionally free from organic filth and a water of unusual purity; typhoid fever has almost vanished from our midst; our last annual report of the health department showing but one death from that disease in the city and that party used water from one of our many old wells, which are all more or less polluted with organic filth.

Lake waters, although less liable to the same percentage of contamination per 100,000 parts than river water, owing to its increased bulk to the same linear space of bankage is not by any means free from organic filth, especially where they are densely populated.

To prove this, we need only refer you to the long series of water analyses of Lake Michigan at Chicago, and Lake Erie at Cleveland, and Lake Ontario at Ontario, Canada, which speak for themselves in unmistakable tones to the observing sanitarian.

It is true that the farther you recede with your intake from the shores of densely populated lake districts, the less organic impurities you will find; yet it is not always practical to put the intake of a city's water supply beyond the possible contamination of organic filth, which is swept hither and thither by constant currents and countercurrents, besides being lashed about by frequent storms.

When the water supply of a city is affected by floods and freshets—which is usually the case when taken from a river and often the same when supplied by a lake—we have still another source of contamination which severely affects the public health, from this great troubling of the waters, which in their fury dissolve and wash out immense quantities of accumulated filth, which is pumped up in our water pipes during the floods, and that often require weeks to wash out after the freshet has subsided.

You will now, no doubt, realize, if never before, the truth of the assertion I made in another part of this paper, "that, usually, a city's water supply is one of the most perplexing problems the city authorities have to deal with."

Dr. Henry B. Baker, the eminent secretary of the Michigan State Board of Health, once said, "When a fire breaks out in a village every person considers it a duty to give a general alarm, and especially prompt notice of it to the fire department; and all citizens co-operate for the speedy extinction of the fire." If this were not done the property in the village would be quite generally endangered by the possible spread of the fire; but when the city authorities endeavor to improve your city water supply in order to prevent the spread of sickness and disease among your fellowmen, do they always receive the support and co-operation of the people as in the case of the fire? Do you ever find the people jumping out of their beds in the middle of the night and rushing half dressed to their fellow-citizens' support on account of sickness. Not much; when it comes to that they fold themselves snugly in their "little beds" and soothe themselves to sleep by repeating the question "Am I my brother's keeper?" The taxes are already too high; we can't afford to have any more money spent in improving our water system, which is good enough for us, just to satisfy some "sanitary crank" in his exalted notions about a purer water supply.

'Tis thus they weigh out life and health, the real bone and sinew of a city's prosperity, against taxation; and by their howling they intimidate the average councilman, who holds his office by the franchise of his countrymen, until he in turn really weighs out life in the balance against the chances for re-election at the next political contest.

The people must learn the force and practical meaning of the good old adage that "Public Health is Public Wealth," before these obstructions to sanitary progress can be effectually removed.

They cannot expect the officers of their city to go far in advance of public opinion in the enactment of ordinances which require financial support to insure their execution; especially when opposition to public opinion means the political decapitation of the authorities who dare to thwart it.

Did you ever stop for a moment to think what your police force costs your city annually? Ah! but you say we must have a police force. What for? To protect the lives and property of our city. Why, sir, you would not be safe an hour in any large city in our land were it not for our police force.

True, we must have a police force and they must be paid good salaries and be efficient officers, and see that the law is executed, for the protection of our lives and property—just what we must have health boards for; and yet, show me a city in the land that allows its health department more than a mere fraction of the financial support it appropriates to its police force for precisely the same thing—the protection of the lives and property of its citizens.

But some one says, "What has a board of health to do with the property of a city?" I will do like the Yankee—answer your question by asking you another—and ask you, what the property of a city would be worth were its citizens continually unhealthy and dying off by the hundreds from the effects of pestilential disease, as compared with a city blessed with a low mortality and the continued good health of its citizens?

You, the people, must learn that money judiciously expended for the protection of the lives and health of a city is always well invested, which will never fail to insure you a paying dividend.

Just think of it! Chicago, the great metropolis of this nation, pays a thousand dollars a day in support of her health department, and considers its money well expended, which, in return, yields a lucrative profit to that great commonwealth.

We have discussed briefly the importance of practical liberality in the support of the sanitary interests of a city, because this is one of the first considerations in the establishing or improvement of its water supply, which in time plays the leading *rôle* in the great drama of protecting the lives and health of its citizens.

We have tried to show you that notwithstanding water was one of the most liberally-supplied constituents of our food, and that we require more of this compound to supply the necessities of our bodies than any other, yet it is one of the most easily adultered compounds we use in our daily *menu*, and less frequently found in a good, wholesome condition than almost any other product used in our daily bill of fare.

This brings us to the practical question proposed by the poet, who said:

> The River Rhine, as is well-known,
> *Washes* the City of Cologne;
> But, oh! ye gods and saints divine,
> Who then shall wash the River Rhine.

To the first proposition of this question I will answer, stop washing the filth of your cities in the River Rhine, and to the second proposition I will say, first, filter the water you use from the River Rhine, and second, boil it before you use it.

In regard to the first part of the poet's question, permit me to say, that in Ohio we have the following law, which, if put in force, would cover this proposition completely:

It says that 'Whoever puts the carcass of any dead animal, or the offal from any slaughter house or butcher establishment, packing house, or fish house, or any spoiled meats, or spoiled fish, or any putrid animal substance, or the contents of any privy vault, upon or into any lake, river, bay, creek, pond, canal, road, street, alley, lot, field, meadow, public ground, market space or common, and whoever, being the owner or occupant of any such place, knowingly permits any such thing to remain therein, to the annoyance of any of the citizens of this state, or neglects or refuses to remove or abate the nuisance occasioned thereby, within twenty-four hours after knowledge of the existence of such nuisance upon any of the above described premises owned or occupied by him, or, after notice thereof in writing from any supervisor, constable, trustee, or health officer of any municipal corporation or township in which such nuisance exists, shall be fined not more than fifty dollars nor less than one dollar."

Our law goes on still further and says, "Whoever intentionally throws or deposits, or permits to be thrown or deposited, any coal dirt, coal slack, coal screenings, or coal refuse from coal mines, or any refuse or filth from any coal oil refinery or gas works, or any whey or filthy drainage from a cheese factory, upon or into any of the rivers, lakes, ponds or streams of this state, or upon or into any place from which the same will wash into any such river, lake, pond or stream, shall be fined in any sum not more than two hundred nor less than fifty dollars."

The question now arises, What shall we do with all this daily accumulation of filth? I answer, utilize it on a sewage farm if possible, which should be located where it will not affect the public health. If this can't be done, then cremate the garbage rather than throw it into our rivers and lakes.

But, you say, both of these are expensive luxuries and will greatly increase our taxation.

Suppose they are; are you going to weigh out life against taxation? Are you going to allow our rivers to become poisonous streams, dealing out sickness and death from their source to their mouths, simply because it will cost you a few dollars to keep them clean?

No city or county can afford to do this. Life is too valuable, sickness too expensive, and death too terrible, to allow our citizens to be slowly poisoned by throwing our garbage into the streams, simply because it is a convenient and cheap method of disposing of it.

This has become a momentous question and the time is near at hand when it must be stopped by the enactment and enforcement of rigid federal laws, if in no other way.

But, you say, while the garbage of cities increases the filth of our rivers, yet their waters are impure at best.

This being the case, what are we to do for good, wholesome, potable water? I answer, where it is possible to secure an artesian well supply that is practically pure and wholesome, by all means do so, taking care to locate your wells in an uncultivated, unpopulated district.

When this can be accomplished pump your water directly from the wells into your mains without any intervening reservoir.

In this way your water will be free from organic filth, of an even temperature, winter and summer, and free from the effects of rains and floods. If this cannot be done, however, and you must depend on a river or lake for your water, then you should subject your city water to a process of precipitation and filtration, and thus remove the sedimentary products that are always more or less present in river and lake water.

In order to make it absolutely safe from the poison of typhoid fever, and free it from the possibility of producing enteric irritation, all potable water should be boiled, as I do not consider any filter proof against typhoid fever germs.

Under no circumstances should you trust the well water of our cities, which are all more or less contaminated with organic filth, and never free from the possibility of organic poison; especially is this true in cities which have not adopted and enforced the dry closet system

Ladies and Gentlemen. I have already detained you longer than I expected when I first commenced this address. My only excuse for doing so is the magnitude and importance of the subject I have endeavored to present to you this evening.

If I have been plain and outspoken on this subject, you will pardon me on the ground of my interest in a theme that involves the life and health of my fellow countrymen.

And now, before closing, allow me to thank you for your interest and attention to this vital subject; also, allow me to thank my fellow sanitarians for the honor they have bestowed, by electing me the president of this association; and, finally, if what I have said or done has aroused any one of you to the importance of this great sanitary problem, I will feel that my labors have not been in vain.

ON THE AFTER-DANGERS OF FLOOODS; THEIR NATURE AND REMEDIES.

By E. D. PAYNE, M. D., *of Towanda, Pa.,*
Medical Inspector to the State Board of Health of Pennsylvania.

In case of a flood, after the waters have subsided, after the dead have been gathered in and disposed of, after the driftwood and carcasses have been burned, there is still work for state boards of health, demanding the exercise of sound judgment, large discretion and not a little labor.

This work may not take the public so readily, nor produce so profound an impression on the public sense as that which precedes it, but it is not less important, and,in many ways, requires greater care and more constant vigilance. The first is like fighting an open enemy who constantly presents his front; the latter is fighting no less an enemy, but one that lurks in ambush, who strikes in secret, who is invisible and intangible, and yet whose blows are none the less deadly We are struck with horror at the rush of the waters, the giving way and sweeping down the stream of large buildings, the piling of wreck on wreck, the struggle and agony of men, women and children fighting for their lives; a feeling of awe and dread takes possession of us, and he must be strong of heart and steady of hand who dares make an effort to save life. The after fight with disease and death requires different qualities; moral courage now takes the place of physical; a keen eye, a pleasant and persuasive tongue, a firmness in enforcing commands, which in many instances must appear like requests, some knowledge of disease and its derivation, some knowledge of state law, a moderate amount of that quality of mind which dares assume responsibility.

The waters have not only carried death and desrtuction in their path, but they have left behind broken sewer pipes, emptied vaults, wells deluged with waters holding in solution or suspension the filth of the flooded district. The walls of houses have a deposit of filth adhering to them, and the cellars are filled to greater or less depth with slime and mud. The weather is hot and sultry, or becomes so before the situation is rectified Nor is this all; poor or scanty food and improper clothing assist in depressing the system and rendering it an easy prey to disease in one who has been demoralized by the catastrophe, and breathes in with his sleep the foul odors which surround him.

Under these conditions it is not unreasonable to say sickness may be expected—sickness of the most deadly type, that known as filth disease, from which comes fevers, specific and non-specific, fluxes without fever, adynamia, that peculiar form of the mucous membranes which is accompanied by a train of symptoms

> "Variable as the shade
> By the light quivering aspen made,"

and which we call malaria, perhaps, because we do not know what else to call it.

Not only this, but the place becomes a center of infection; the breezes catch up the germs and float them in the air to other localities; the waters carry them down the streams to some point where an economic water company thinks filters bring additional expense without additional safety; and many accept the dispensations of Providence without a thought of fighting against them.

Kind friends come to nurse the sick, and carry away infection to some point where each becomes a new center of it. People, actuated by various interests or simple curiosity, do the same. Public funerals are held where the simplest services and quietest interments should only be allowed.

The first question in this respect is, Do the conditions justify the statements above made? To my mind they are so plain as to need no supporting argument. I think the specific nature of certain diseases is so universally accepted among scientific men, and that in any one case of a specific disease it has had for a parent the same form of disease, that an apology is needed in such a meeting as this, for introducing the question; and I only do it, and give some illustrations, as a basis upon which to build my statements as to the nature of the duties of the state boards after floods, and the duties of citizens in co-operating with them.

Strange as it may seem, I have known instances in late years of a physician in large practice, telling the families under his care that they need not take pains to isolate the children sick with scarlatina—conveying the impression that scarlatina was a mild form of scarlet fever, and giving that name to those cases which appeared in a mild form; that it often appeared to but one child in a family; that in very many instances persons were exposed without contracting the disease. I will add to this statement another, viz: That within the past few years, I have known otherwise intelligent members of the community to take the same position, and not only laugh at the efforts of the physicians to establish good quarantine and good hygienic surroundings, but to do so honestly, and honestly regard the efforts to produce disinfection as one of the fads of the day—one of the popular crazes to be met.

It is a matter for congratulation that the great daily papers have given space to science for the furtherance of the new ideas. The country papers take up the subject, and, not to be thought to be behind the new ideas, reproduce the subject until it reaches the quiet valleys and distant hill-tops. A great change has taken place in the minds of the people in a few years.

So long as we could only say, "I believe that certain diseases which are ordinarily called 'catching,' are the result of the reception into the system of a germ which produces the disease," we were at a disadvantage; for we were immediately told to produce the germs. If asked what it looked like, we could not tell.

We were laughed to scorn, if a case of diphtheria, scarlatina, measles or typhoid appeared in a community as the first case, and no apparent connection existed between it and any other. Unpleasant experience may have been had with the itch. Did they not know they "got" it from another? Had they not actually put a "magnifying glass" over the ascarus and seen it? They know they must not come in communication with small-pox, but exactly why they did not know. They know that in case of scabies they need not fear if they did not come in contact with it. But in the case of variola they know that they must neither come in contact with it nor in communication with it; but why, they didn't know. They could understand contagion, but not infection.

This, however, they did know; that contact with scabies did not produce variola, and that communication with variola meant something more serious than rubeola; that exposure to the mumps, which they know to be "catching," did not mean to them a case of scarlet fever.

In other words, they were able to demonstrate that like always produces its like, and that exposure to disease did not mean that the resultant might be any one of a dozen forms, as individual characteristics and environments might decide. They also knew that to "take the breath" in a case of mumps, meant an attack of the disease, if they had never had it before. But why did not taking the breath from an ordinary cold produce mumps? Evidently, because they thought a certain something was conveyed in the breath of one sick with the mumps to the healthy individual. How many stop to consider that that certain something must be of a material substance and form, we probably will not know.

So, when we come to consider the matter, we do not wonder that investigators have been hunting for and trying to identify this individual certain something which, when passed from one individual to another, always reproduces itself and its attendant phenomena. It is more than thirty years since Prof. J. K. Mitchell taught his class that he had seen so many instances of apparently healthy husbands or wives sickening and dying of tuberculosis in a short tmie after burying a tuberculous spouse, that he had come to believe that one contracted it from the other; and, though mildly indulged and mildly chaffed, he taught that, in his belief, the time was coming soon when the germ theory of disease would prevail. It is more than twenty years since Dr. J.H. Saulsbury hunted for and thought he individualized the germs of a number of diseases. I knew of these men long before I heard of Pasteur or Koch. *En passant*, let us honor the names of our countrymen who, though hunting after truth sometimes fail to find it, as much as we would those of foreigners who though they often think they find some new thing are frequently shown it is no new thing at all.

For myself, I as firmly believe that any infectious disease is the result of the reception into the system of its own specific germs as I do that any plant that grows in my garden is the result of its own specific seed; and I would as soon expect a pumpkin or a squash to spring up where I had planted a potato, depending upon soil and climate to determine which should appear,as I would typhoid, diphtheria or smallpox to proceed from a germ common to all. More than that, I would as soon expect a plant to grow where I had put the ground in the best possible condition for is growth but had planted no seed, as I would a specific form of disease to appear, no matter how favorable the circumstances for its appearance, if the specific germ of that disease had not found reception in the individual.

When asked why do not all persons exposed to specific poison contract the disease represented? I ask, in reply, Why do not all seeds of the vegetable kingdom germinate? Why do not all bullets fired in battle kill? Why do some fuses fail to explode a bomb?

I should feel that I was unwarrantably encroaching on your time in this discussion, but for two reasons. If the germ theory of disease is not true, then is your labor in vain. In case of a flood an engineer with his gang of men; a cartman with his gang; a scavenger with his gang, and an emergency committee, to distribute food and clothing, would answer every purpose. But, believing it true, I use it as basis for the consideration of the dangers which are likely to arise after a flood. I will illustrate by some examples: A number of years ago scarlet fever appeared in a family in this town. The child was confined to an upper room, where she passed through the disease and made a fair recovery. A year from that time a young lady came to visit the family and was put in the same room, and on the ninth day came down with the disease.

Six years ago, my own little child was attacked with scarlet fever. There was no other case in town, so far as I could discover. She had certainly not been exposed in any known way. But in a town sixteen miles north of us the disease existed in an epidemic form, and a strong north wind blew for a number of days. A few years ago diphtheria appeared in a family in West Franklin this county; immediately after a large number of cases appeared in the neighborhood. Its appearance was inexplainable until it was found that a female relative of the first family had passed through this town, and had slept with a child that had sore throat.

A number of years ago the nurse girl in a family in this town was called home to help care for her sister's children, sick with scarlet fever. On arriving home, she went into an unoccupied room, completely changed her clothing, and helped care for the sick. When ready to come back, she went to the same room where she had left her clothing, took a bath and put on the clothing she had worn there.

When she arrived at the house where she was in service, the youngest child was delighted to see her. He climbed into her lap, put his arms about her neck, and was fondled. Nine days after he sickened with scarlet fever. The other children had had the fever previously and did not take it. It seems probable to me that though the nurse had taken what she thought were good cautionary measures, she had carried the germs in her hair, and, during the fondling of the child, he had inhaled them. I think the reason why in each of these cases the same form of disease was reproduced, was owing to the law long ago given by the Almighty, when He said, "Go forth and multiply, each after his own kind. Neither do we grow grapes on thorns, nor figs on thistles."

To proceed with the statement of the nature of the work to be undertaken by state boards after floods, I would say it is manifestly their duty to protect the country from the influence of specific diseases. When I say the country, I speak advisedly; for if the flood of May of last year is any criterion, disease might be scattered far and wide, but for prompt action. The waters bring to the surface and distribute over large sections all the filth that has been hidden for years. This was not only the case in the Conemaugh valley, but in the counties of Lycoming and Tioga, in this state and the southern tier of New York.

In reference to the germs of specific disease, I will argue no farther, except to say that I am not aware that the period of viability or ability to reproduce its like has yet been determined for any of them. I have cited a case of scarlatina, which shows the germ to be active after it had apparently lain dormant for a year. How many germs of scarlet fever and diphtheria are packed away in family closets to be brought out and be the origin of sporadic cases we shall probably never know.

That the action of floods, in binging to open exposure all these germs, is different from any other action I cannot see. I have cited a case to show that the germ of diphtheria can be carried for miles after transient exposure. During an inspection at Trout Run, Lycoming county, last year, I demonstrated to my own satisfaction that the flood had washed out a vault in which typhoid dejecta had been deposited at least four years previously, and that the water holding in suspension these germs had flooded a section of a town where water was supplied to the public by driven wells and that the people so supplied had contracted typhoid.

But we will leave the question of specific germs, and inquire whether the waters that simply hold in suspension earthy matter—often foul smelling and disgusting—can, without containing specific germs, produce disease. I do not hesitate to say they can. But I would differ from those who say the form of disease would depend upon personal characteristics and environment. I do not believe this world was made by chance; I do not believe a tree or plant springs up by chance, and I do not believe that any form of disease appears by chance. Certainly these non-specific deposits will produce disease, but not specific disease. The mucous membranes will be affected, resulting in nausea, vomiting, diarrhœas and dysenterys. The nervous system will be affected; producing malaise, general prostration, adynamia and malaria. Fevers will result, but they will be of an ephemeral or simple continued type, and in no instance will either of them reproduce itself in a fresh subject unaffected by the conditions which produced it in the first.

I would say, then, that the first duty of state boards under such circumstances was to take posesssion of all such flooded districts, and, by the judicious use of its inspectors, ascertain the precise conditions which obtain. These inspectors should be clothed with authority to enter upon any and all premises and find out the exact conditions; and these they should minutely report to the board or its executive. I would say the first remedial measures should be to prevent the use of any water that was suspected of contamination. I would next direct attention to the food supply, inspecting all that was offered for use.

Next the clothing that was brought out of their own closets, where it had been stowed away, and that which came out of all the closets in the land, offered them for use, should receive attention; and all that appeared musty or long disused should be disinfected. This could all be preliminary to or go on at the same time as the general cleaning up, and would be the most effectual guard against infectious diseases. Next in order would come a thorough cleaning of houses, cellars and premises. This should be as thorough as possible. The simple pumping out of cellars and washing of their walls should not be sufficient. They should be washed and re-washed until all appearance of slime is gone. Then they should be washed with disinfecting solutions, until all odors and suspicion of filth was destroyed, and finally left with lime washed walls and lime distributed on the floors to absorb the moisture.

But what shall be done with the sick cases as they arise? I would say they should be immediately taken charge of by the board and treated by its own agents who, would make daily reports. Immediately separate each infective case from its surroundings, place it under the care of a physician of the board, and care for it by the board's trained nurses. To this end, I would have erected so many small hospitals as might be needed.

They need not be expensive. Abundant experience has shown that cheap board structures, properly situated, built only tight enough to keep out the storms but not to keep out the air, are the safest and afford the largest percentage of cures in infective diseases. Costly and substantial structures—no matter how perfect the system of ventilation, fall far behind these in warm weather. The well-to-do man would fare far better in such a structure than in his well-appointed home. I would also have a separate structure for each specific form of disease, if practicable, so that no person might be exposed to an infectious disease other than that he already had.

I would say, further, that not only should these measures be under the control of the board, but that all voluntary assistance that was not ready to place itself at the disposal of the board and under its system of rules, should be warned off. Such an occasion is not the one for gaining cheap fame or reputation. It may make better newspaper items, but it will not meet the emergency so speedily, grasp it so firmly, or overcome it so readily.

All voluntary contributions and state appropriations should also be placed in the hands of the board. Food, clothing, medicines and supplies of all kind should go into the store-houses of the board, for distribution, and not subject to the indiscriminate misuse and waste they might have if each man who brought supplies insisted on being able to say on going home that he distributed them himself.

Finally, this scheme would involve the necessity of a greater appreciation on the part of the several states of the necessity and usefulness of these state boards, and the legislatures should place at their disposal such funds as would make their usefulness effective.

IMMEDIATE DISINFECTION OF DEBRIS OF FLOODS.

By M. HOWARD FUSSELL, M. D., *of Manayunk, Pa.*

It is with diffidence that I, an humble practitioner of medicine, presume to speak before a body learned on sanitary matters, upon a subject in which you are experts and I a novice.

No one, however, can pass through the experience that was the lot of the workers in Johnstown, after the memorable flood in 1889, without having decided impressions made, and consequent opinions.

It is to be devoutly hoped that there does not exist another such death-trap on the surface of the globe as existed at Johnstown before the 30th of May, 1889.

But as the cause of that great disaster was not heeded by the few who recognized it, and not known to many, so there may be many other places just as perilously situated, and though no such great emergency may arise, it behooves us to profit by the lessons learned in the valley of the Conemaugh, in order to apply that knowledge in the lesser emergencies constantly occurring. Just here I wish to add my testimony to the praise of the State Board of Health of Pennylvania.

Few persons recognize the heroic work done by Dr. Benjamin Lee, its secretary, and by his associates. But for the energetic and wise measures adopted by Drs. Lee and Groff, who were in immediate charge, it is as certain as fate that a great pestilence would have followed the horrible flood.

The survivors of the flood were paralyzed by their unparalleled misfortune; they apparently did not think of the great danger that would certainly arise from the thousands of decaying bodies of animals; their whole thought naturally centered on the recovery of the bodies of the dead human beings. Into this chaos of thought and action came Lee, Groff, and their associates, instituting, promptly, measures for the destruction and disinfection of the carcasses, and thus saved the whole country from what might have been a terrible epidemic.

The writer did not reach the scene of the disaster until early in the morning of the fifth day. By that time the secretary and Dr. Groff had taken measures to clear the banks of the river below Johnstown, and had begun to form the sanitary corps of Johnstown.

Vast numbers of dead and decaying bodies lay exposed about the acres of débris, and hundreds more were buried in the wreck, with putrefaction somewhat delayed but none the less certain.

The great question presenting itself to Dr. Lee and his associates was how to rid the town of these sources of danger. The resources at hand were limited, sadly limited, but in the course of twenty-four hours after the chief deputy was appointed the corps was in good temporary working order.

The first necessity here, as it must be in all emergencies, great or small, was efficient assistants.

I think that when it is at all possible, the assistants should be medical men, or men trained in sanitary work.

An ordinary doctor certainly should have better ideas of the dangers of filth than an untrained individual.

The ordinary man will view with composure the decomposing carcasses of hundreds of brute animals, and still more complacently masses of decayed vegetable matter, while he is filled with horror at the sight of a decaying human body. The reason of this is self-evident of course; but while the fact remains it would certainly be unsafe to put such an individual in charge of a disinfecting corps, for fear he would likely allow the many animal bodies to go without destruction, while he buried or carried to a morgue the one human body.

Therefore, those in charge of the disinfecting corps should be physicians when it is possible.

It seems almost trite for me to write that the bodies of animals should be destroyed and not buried; yet I found in many instances gangs of men busily engaged in burying the carcasses of horses, instead of destroying them. The region to be disinfected should be divided into districts, and a medical man placed over each. The smaller the district the better and quicker the work will be done.

The equipments of the disinfecting corps need be but simple. A rope is a necessity, axes and shovels are needful, but in a dire emergency can be dispensed with.

The choice of disinfectants then comes up, and I take it that they can be divided into fire and chemicals. Fire to be used when it is at all possible; chemicals in the few instances where the bodies and other decaying objects cannot be burned.

When it is possible, each corps should consist of the chief and twelve men. That number of men I found to be amply sufficient to take the body of a large horse any reasonable distance, and over any sort of surface.

The corps starts out armed with a rope, axes and shovels where obtainable, chemicals if possible, and the means of producing fire. If it is possible to obtain it, each corps should carry as large a quantity of rosin as convenient. Everything should be burned when it is practicable.

If a large animal is found covered up deep in the débris, one of two plans can be adopted. Either a certain section of the débris can be separated from the rest, and fired as it lay, while the remainder is protected by the use of water; or the animal can be removed from the débris and burned on a clear spot.

It is in very rare instances that the latter cannot be done; the wreck can be cleared in order to allow approach to the body. A rough path of boards laid over the pile of wreckage, all the twelve men can easily slide the body over this to a place where the pile will not be fired.

With my twelve men I, in one instance, removed the bodies of five cows from the porch of a house, in the center of one of the wards and conveyed them several hundred yards to a place of safety, this was done in about four hours.

The bodies can be burned by simply covering them with wreckage and setting fire to it, a good blaze over the body for eight hours, will certainly destroy it, and the blaze can be kept up by leaving one or two men in charge with orders to keeep piling on the fuel.

If rosin can be obtained it is a good plan to cover the body thickly with it and then place the burning materials. This, however, is not considered a necessity.

Human bodies should of course be removed for burial and wherever it is possible a special corps should be detailed for that duty.

Besides the bodies of men and animals there will always be quantities of beds and bedding, vegetable matters of all kinds, which are prone to putrefication.

One of the most difficult tasks the inspector will have to perform will be the destruction of these latter articles. Beds, soaked, foul odored and certainly useless, will be lugged into the cellars and garrets of the inhabited houses to be dried. This of course must not be permitted and many tongue lashings will the inspector receive who presumes to destroy what the poor loser considers useful to himself.

In this, however, as in all other matters must the inspector's judgment come into play, and he must not allow his kindly feelings to overcome his disinfecting sense.

I wish to emphasize my thoughts upon the use of fire. Fire is the most certain, swiftest, disinfectant in our possession, and for that reason alone should be used where at all practicable.

There was a strong movement on foot in Johnstown to burn the wreck, which was overcome by the officers in charge of the town.

Two objections were offered to this:

First. That many human bodies would probably be burned.

Second. That valuable property would be destroyed.

The same suggestions and the same objections are likely to be raised in the event of any great flood.

Doubtless many bodies would have been burned, but, personally, I would much rather think of the body of one near to me being burned in an act to protect health, than I would of its being exposed and becoming a source of danger to others.

Many of the bodies recovered later are sure to be unrecognizable, save by wearing apparel or some peculiar marks, and it must be but a melancholy satisfaction to possess a body out of all semblance to a human being, not to speak of the one dear to us.

I am quite sure that thousands of dollars and weeks of valuable time, together with much of the comparatively slight sickness that existed after the flood at Johnstown, would have been saved, by the early firing of the worst parts of the wreck.

One week after the flood, existence in the center of parts of the wreck was almost unbearable, and must have been detrimental to the health of the survivors.

Firing of sections of the wreck would have been perfectly practicable with but little loss of valuable property. A certain area could have been separated from the rest by means of alleys cut through, and firing of the rest of the town could have been prevented by the concentration of the fire engines on this one point.

In this way masses of wreck, that it required days to clear up by hand, would have been cleared in hours. A clear saving of money and perfect immunity from danger of disease.

If the orders were given by the authority of the state board, and by means of the fire good property destroyed, the owners of that property could recover from the insurance companies.

Of course such wholesale firing could apply only where there were masses of useless wreck, and not to blocked up streets with valuable buildings on either side.

Instances will arise where some body or mass of putrefying substance cannot be removed from the drift to be burned, and when prudence on the part of the inspector or positive orders from higher civil authorities prevents firing of the wreck as a whole. Such cases must be met by the free use of chemicals.

Copperas, powdered as finely as possible, or a saturated solution of copperas may be freely used. The first should be used where the body is not permeable to water. The latter where the mass is more or less porous.

In this manner a large mass of decomposing matter may be made innocuous for a considerable time.

Bromine is certainly a good actual disinfectant as well as a deodorizer. A foul mass sprinkled with a moderately strong solution of bromine will remain innocuous for several hours.

Bichloride of mercury can be used, in strength of 1 to 500. Whenever enough of this solution can be brought in contact with the mass it is needless to say that the process of putrefaction at once ceases.

Solutions of carbolic acid can, of course, be used with the same effect as bichloride of mercury and possibly with less danger.

In any case where disinfection in this manner is used the disinfecting substance must be applied daily, or oftener, for obvious reasons.

In order to facilitate the work of the disinfecting corps, it will be well to have additional inspectors to search for places that need disinfection and report to the chief of the corps, in order that he may go at once to his work of disinfection, and not spend his time in searching the drift.

To summarize: *First.* The flooded district should be in charge of the executive officer of the board of health, where such a board exists, or under a medical man of wide experience.

Second. It should be divided into as many districts as practicable.

Third. The chief of each district should be a medical man, or one trained in sanitary matters.

Fourth. All putrefying masses should be at once buried or disinfected.

Fifth. Where practicable, the drift should be burned as it lies.

I have spoken often of the flood in the Conemaugh, because my sole practical experience consists in my labors after that flood, and because such a text has never before been given to any sanitary convention, and, it is to be devoutly hoped will never again occur.

THE SANITARY SURPRISES OF THE FLOOD OF 1889.

By J. B. KREMER, *of Harrisburg, Pa.*,
Secretary of The Flood Relief Commission of Pennsylvania.

The thoughts which I have gathered together at this time must be considered as coming from a plain business man, and formed from that standpoint, rather than from one whose line of thought and general experience is in the sphere of diseases, their causes, and the methods for their relief. Indeed, I feel strangely out of place in a convention of physicians, and I attribute the honor of a position in your programme entirely to my active connection with the distribution among the sufferers in the recently flooded parts of our state, of the most magnificent charity the world has ever seen. This work extended over many counties, along many waters, and afforded me an opportunity of seeing, under varied phases, the havoc wrought, and the consequent results, by this most powerful element when it had broken away from its natural bounds, and I have been much interested in noting the different effects produced in the several localities which suffered most severely.

After the first great cry from the nation, of horror, at the merciless destruction of life, and the outburst of sympathy for those whose friends and kindred had been swept away, and after food was provided for those cut off from all sources of supply, the thought of the people seemed to turn at once to the care of the living—as to their sanitary surroundings. The profession, as well as the laity, expressed great fears for the health of the towns and cities which had been submerged, and, the calamity occurring at the opening of our summer season, for the effect which the decomposition of animal and vegetable matter might have upon the people whose water supply was in part received from streams flowing through the valleys most seriously suffering from loss of life. The attention of those who were selected to actively have part in the work of relief was thus early directed to this element of danger, and, as far as possible, at the suggestion of members of your profession, disinfectants were sent to the flooded districts, but beyond this no steps were taken, and having had no experience, no suggestions were made by the relief commission having in view the prevention of disease.

Being prepared, therefore, for a possible call upon the fund contributed for general relief, by reason of an epidemic, I have been greatly surprised that though the conditions of the several districts varied much, yet in no one of them, except only in the case of Lock Haven—to which reference will be made again—has there been directly chargeable to the overflow of the waters any large increase, either in the death-rate or in the number of cases of sickness of the character anticipated, and in some cases, very seriously overflowed, both the sick and death rate have been lower than the average. That this statement is warranted I think there is no doubt; my information being received from the committees, who, in their several localities, acted with the commission in relieving the wants of their neighbors.

On the Susquehanna river, the cities of Clearfield and Renova were in part submerged, but from waters coming from higher points on the river, rather than from a sudden rising in their vicinity, and the same may be said of Tioga, Lawrenceville, Jersey Shore, Williamsport, parts of Muncy, Marysville, Milton and Harrisburg, and, the waters subsiding, there was left behind a comparatively small amount of residuum. This is true also, of the towns along the Juniata river, Huntingdon, Mapleton, Lewistown, Mifflin, Newport and Duncannon, while Lock Haven—which seems to have been within easy distance of an extraordinary rainfall—was left when the waters receded with a layer of mud, the character and quantity of which could only properly be appreciated by personal observation. Some of these towns have a partial sewerage system, while others have but surface drainage; cesspools were washed out and the contents, mingling with the waters, must certainly have formed part of the sediment left by the receding waters. In some cases cellars were cleaned with scrupulous care and sediment was removed to a presumably safe distance from dwellings, while in others only the most necessary work was attended to in removing mud from the cellars, and the deposits from them and from the streets were used to fill up low places in the house yards and lots of the citizens. It is true that directly within the current rushing through these towns the water had in one respect a beneficial effect, as it thoroughly cleaned its course and left the streets and yards in better condition than before, and this was especially the case in the many small settlements which suffered severely along the smaller streams, where, in many cases, an entirely new surface soil is presented, the old having been washed away; but the parts of towns most severely affected were those away from the direct current and covered only by the quiet, backed-up water which receded as slowly as it had advanced. In some of these towns disinfectants were rather freely used, in others to a limited extent, and in others not at all, except as individuals may have used lime about their own premises.

The conditions being thus present to which we have been accustomed to attribute certain forms of disease, viz: general inundation, thoroughly soaked plastered walls, moulding paste on wall papers, a deposit of mud mixed with decaying organic matter, which was not only about but within the dwellings—in some cases in every dwelling in the settlement—and which, as it dried in concealed places, under floors and within wall partitions, became a part of the breathing atmosphere at every agitation, and with all a summer of exceptional dampness and with less than the usual amount of sunlight, had we not reason to be surprised at the general freedom from disease? Lock Haven—to which reference has been before made—as having to a greater degree than other towns the conditions requisite for the full sway of malarial diseases, after passing through the summer without trouble, was visited in the late autumn with a low type of fever which threatened serious consequences. By many this was attributed to the causes above mentioned, but it is more than probable that these had, if any, only a modifying effect, the prime cause being of an entirely different origin. But on this, I presume, some of your members have formed an intelligent opinion based on personal investigation.

While surprised at the record of the settlements on the Juniata and Susquehanna, we yet more wonder when we consider the condition in the Conemaugh valley. Here were all the conditions present in the other localities, but in vastly greater degree. Deeper water, standing for a longer time; a greater amount of sediment; and, mixed with it, carloads of flour, meats, provisions, the contents of all the storehouses of a large city, with their various kinds of animal and vegetable matter, and this for months, under a burning sun, being stirred up and carried through the streets on hundreds of wagons, to say nothing of the bodies of animals and of human beings, who even to this time are being found almost daily, and in many cases within a few inches of the surface of the ground. Add to this the changed conditions of living, from comfortable homes to tents and shanties, or, still worse, crowding to many times their proper limit the dwellings of their more fortunate neighbors; from comfortable beds to sleeping, for weeks in some cases, on the floors or on the ground; from a home table to meals, which though abundant, yet from the lack of facilities were but illy prepared; and to all this the terrible physical and mental strain to which the whole population had been subjected and which rendered them less able to withstand or to throw off the attack of disease. It was not a surprise that knowing of these conditions, physicians from all parts of our state and from some of our neighboring states, hastened there to give the benefit of their skill and experience to the many who would most likely require their assistance; but it is a surprising thing that the records show but little, if any, greater mortality in this valley than is usual, and that the number of cases of sickness of the character referred to has not been greatly in excess of that of other years. Here disinfectants were used, of kinds innumerable, in quantities marvelous, and in cost—as I learned when the bills were presented—stupendous, and the contributions from the various makers and dealers may have nearly equaled the purchases. They were used in every way, carted from house to house and left in abundant quantities, carried by the workmen to their places of labor, placed in, on and under everything in the valley, and even sprinkled on the street from watering carts; they were everywhere, they permeated the atmosphere, and a traveler from Johnstown could always be known by the foul odor he carried away on his clothing.

Can the good health, or rather the freedom from the feared epidemic of the citizens of this valley be attributed to this free use of lime, chlorides, *et al.*? If so—and both science and experience seem to affirm it—this to the laity is again a surprise, and the facts should be so heralded that a greater faith in this form of preventive would be made to possess the minds of the people generally.

A practical suggestion may here be made for the consideration of your body. When casting about for information as to what best could be done for the several settlements in the flooded districts, I failed to find such specific directions as to the various kinds of disinfectants, and how and in what quantities they should be used, as was desirable. True, each maker accompanied his product with "full directions," and the commission was besieged with offers of all kinds from manufacturers for the introduction and use of their particular preparations, but we had no code of rules for the guidance of individuals, whether in town or country, as to the best use to be made of the materials which might be most available to them. Such rules, in popular form, may be in use, but we were at least unfortunate in not finding them.

In looking, then, to the future care for submerged districts, it would be well for boards of health to prepare in advance circulars or hand-bills, giving in plain terms full directions for the use of the various disinfectants, and particularly for the benefit of farmers and residents in small villages, information as to the use of such articles as would be most nearly within their reach when it is not possible to send to them the more powerful preparations. They should have information concerning the advantages of the use of the more simple articles which are available in every neighborhood. These rules or instructions should be kept in quantities, and at once sent to towns and villages and mailed to isolated individuals when the necessity might arise.

Believing, as I do, that the general good health of the Conemaugh valley was made possible only by the free use of such means, and that, whatever other causes may have assisted, their use was an important factor as to the other places mentioned, it is very necessary that not only should such information be given as suggested, but that promptly, and in the most liberal manner, through properly organized channels, a supply of the disinfectant which may be judged best for the purpose, should be sent to the places requiring aid; for it must be remembered that at the time of such calamity the people affected are least able, for many reasons, to help themselves, and that charity is the best which is dispensed at the time of greatest need.

THE DESTRUCTION OF OUR FORESTS THE CHIEF CAUSE OF THE FLOODS THAT HAVE DEVASTATED OUR COUNTRY.

By C. F. ULRICH, A.M., M.D., A. A. *Surgeon U. S. Marine Hospital Service, Wheeling, West Virginia.*

Our country has lately been ravaged by extensive and disastrous floods. The great flood of the Ohio valley in 1884, with its attendant destruction of property and, in many instances, of life, will long be remembered. The subsequent overflow of Wheeling creek and other streams, with its wholesale destruction of bridges, carrying away of houses, and the drowning of entire families, will not be soon forgotten. But the climax of this series of calamities was reached by the horrible disaster of Johnstown, in 1889, the horrors of which will be related in song and story long after the present generation shall have been laid in the dust.

The question naturally arises, "must these things be? What is the cause? and, Can they be prevented?"

There are, no doubt, various causes working together to this end, the discovery of which requires a thorough knowledge of meteorology, which the busy practitioner is unable to attain, and which must be left to the special student of that department of science.

But there is one cause—in my opinion the chief one—that lies near the surface, and that every one, learned or unlearned, can easily understand. It is the wholesale destruction of forests, as it has been practiced for the last hundred years. This cause has been recognized in Europe, and is well understood there, as shown by their forest laws and the care taken of the original forests, as well as the continual planting of new ones.

This is not only a cause of floods, but also of their opposite—of droughts; the two complementing each other.

It has often been remarked that floods and droughts are of much more frequent occurrence now than they were in the earlier history of the country, and surprise has been expressed at this fact.

Our rivers, in former times, afforded a highway for thousands of boats, great and small, being navigable the greater portion of the year. Now we either have the channels so shallow that no boat of any size can run, or the stream overflows its banks and cannot be satisfactorily navigated on that account. The principal reason of this difference is the reckless and wanton cutting away of the forests that once covered our land.

Let us see how this cause produces such disastrous effects.

When the rain falls upon a dense forest, a large portion of it is retained by the foliage, which prevents it from reaching the ground so rapidly as it does in an open country. We all have experienced this when, caught by a sudden shower, we made for the nearest large tree that was in sight and took refuge under its spreading boughs, where we were comparatively safe from the rapid gush of waters.

The ground, protected by trees with heavy foliage, is soft and spongy, rendered more so by the annual fall of leaves which decay and combine with the soil.

Now, when a heavy rain falls, it is first delayed, as I have stated, by the foliage, so that it does not come down with such force and rapidity, but strikes the ground softly, enabling the spongy soil to absorb a large portion of it and give it off gradually. This finds its way into the streams with sufficient slowness to enable the stream to carry it off without overflowing the banks; for we all know that streams overflow because the water rushes into them faster than it can be carried off.

On the other hand, denude a certain extent of country of its forests, and the ground is baked hard on the surface by the heat of the summer sun. When the rain falls with force and in large quantities, the water rushes with tremendous rapidity down the naked mountain sides, washing deep gullies as it goes along, carrying with it whatever there may be of soil, which is no longer held together by the roots and radicles of the trees, depositing it in the valleys or carrying it to the mouths of the large streams, thereby obstructing navigation.

Let us take, for example, the great Ohio valley, in which we are all so much interested. Suppose, instead of the wholesale destruction of forests which has been practiced during the last century, the valleys and hilltops had been put in cultivation, while the steep hillsides had remained covered by the original forests; only the largest trees being cut out as the timber was needed, or those beginning to decay removed to make room for the young and vigorous trees to grow and spread out. What would be the condition of things at the present time? The country would present a more beautiful appearance; the climate would be more equable; there would not be such extremes of heat and cold; our spring rains would not result in disastrous floods; nor would our summers be rendered almost intolerable by such awful droughts. Look at the countries bordering on the Mediterranean Sea, once the garden of the world, producing fruits, grains and flowers to delight the eye and make glad the heart of man; where arose, bloomed and grew to perfection the highest civilization and culture known, at that time, to the human race. What is it now? Mostly a barren waste, with naked rocks, and arid, unproductive soil, where the inhabitants can scarcely earn a livelihood. The causeless, wanton and wicked destruction of the forests, promoted and encouraged by the Mohammedan religion, has done the greater part of this work. The beautiful forests, cultivated by the Hellenic races, the groves, sacred to their divinities, used to beautify and adorn the land, have been leveled by the ruthless vandalism of ignorance and superstition, until the inevitable consequences followed; a succession of droughts and floods; the former rendering the land unproductive; the latter washing away what good soil there was; thus permanently ruining the land and converting much of it into arid wastes.

The final result of this was that the countries, subjected to these changes, were reduced to poverty; such of the inhabitants as were willing to work, emigrating to other countries; while the indolent portion of the population, better satisfied because there was nothing to do, remained, earning a precarious livelihood by preying upon tourists and antiquaries. Thus, what was once the Eden of the world and the home of civilization and culture, is now almost a barren desert, inhabited by a people not far removed from beggars and robbers. A similar result will inevitably follow in our beautiful and fertile Ohio valley if the vandalism of the wanton and causeless destruction of our forests is persisted in. Already as you descend "La Belle Rivière," the beautiful Ohio, in one of our palatial steamers you see the bald hillsides, shorn of their beautiful and health-giving forest-coverings, seamed with gullies and ravines, which make them most unsightly to behold and utterly unfit for cultivation. In the long summer, without rain, the whole face of the country is parched up, the crops are poor, the people look discontented and unhappy.

When at the close of winter the snows begin to melt and the rains to fall, the gullies become rapid brooks; the ravines are converted into mountain torrents; the creeks are changed to great streams, and the rivers are transformed into inland seas. Houses are swept away; the accumulated comforts of a lifetime are annihilated in a few hours. The damage does not stop here. What is it that makes the "Father of Waters," the great Mississippi, so much higher than the country through which it flows, necessitating the building of expensive levees? Why is it that millions of acres of fertile land are inundated by crevasses,or breaking through of these levees,and the labor of years destroyed in a day, preventing those lands from being cultivated as they should be and making them a desert waste? It is because the tributaries of that great stream, unprotected by forests, wash all the soil of the lands through which they flow, into the Mississippi, thus filling it with alluvium, raising its bottom higher and higher, compelling its waters to rise above the level of the adjacent lands, and where unprotected by levees, causing it to spread over the land, rendering it useless for cultivation and unfit for human habitation.

Down at the mouth of the Mississippi there is accumulated such an immense mass of this alluvium that the government has been compelled to expend many millions of dollars in the construction of jetties to keep open the navigation between New Orleans and the Gulf of Mexico. I merely make incidental mention of this; the subject being the floods in the Ohio Valley. The final result of these oft-repeated calamities, is, that the inhabitants of these beautiful and fertile valleys become discouraged by so often losing the fruits of their labor, and cease to improve the land, refusing to expend their energies on what will only be destroyed by the next great flood. The cultivation of the land will grow less and less, and civilization, instead of marching on, ascending higher and higher, until the wildest imagination of the enthusiast has been surpassed, will retrograde and mankind will revert to his original barbarism.

What is to be done to prevent this calamity? Cease to destroy the forests where they yet exist; replant them in places where the greed and ignorance of mankind have annihilated them; enact forest laws as they have in Germany and other European countries; plant new forests where they never existed before; plant willows on the banks of your streams to prevent them from being washed away; plant groves in the immediate neighborhood of your cities; in short, foster trees wherever it is possible. Cultivate the valleys and the undulating highlands; leave the precipitous, untillable hillsides and mountains with their beautiful and health-giving forest coverings, presenting us with the ever-varying picture of foliage, of delicate green interspersed with white and pink blossoms in the balmy springtime; the varying shades of rich deep green affording a pleasant shelter from the burning summer sun, and the lovely variegated autumn foliage toward the end of the year. We will then have an abundance of land under cultivation; an equable and temperate climate; a sufficiency of moisture, even in mid-summer; moderate spring rains falling in such a way as to enable the rivers to carry off the water without flooding the country and destroying the results of man's labor, but simply to improve navigation and add to our commerce.

The inhabitants of a country thus blest will be contented and happy. Receiving the full benefit of their efforts, they will be stimulated and encouraged to labor still farther, adding to their comforts, beautifying their homes, educating their children and bringing them up in habits of industry, economy and virtue; thereby improving the human race until the wildest dreams of the speculative philosopher are more than realized; the world becomes an Eden and the Heaven which has been so variously described by religious dreamers, is to be found in the beautiful mountains, valleys and plains of our lovely planet.

EMERGENCIES.

By A. J. GRAHAM, M. D., *of Peoria, Ill.*

We understand by an emergency, that which calls forth immediate action; an instance or an event that springs upon us unawares, often, too, at a time when we may be least prepared, if not wholly unprepared, to meet it.

These emergencies are of usual, of every-day happenings, seemingly they momentarily confront us, some of a minor, others of a most serious nature.

In reality a man's life-work consists in battling with emergencies, with reverses and with calamities. He cannot hope to pass through this world without coming in contact with them. They are liable to confront him in moments of prosperity as well as in times of adversity. None are exempt, the rich and the poor are sufferers alike, and at divers times nations have been known to tremble under and monarchs to be prostrated by them.

If they have no other mission, it may be said they serve as a test scale, upon which a man is placed and weighed for what he is worth, and with many it is "Mene tekel upharsin." His success, however, in battling with and emerging through them, depends upon his experience, knowledge, his decision of purpose and in the exercise of sound judgment, and of profound coolness. In the history of all important undertakings these traits of character, the two latter in particular, have been exemplified as the reliable, and with strict adherence to them it is remarkable, and oftentimes one feels surprised at the degree of success attained, though in attaining it he may have had to labor under the most adverse circumstances. With every appliance and convenience at hand to work with, it is not always then a true test of one's ability. The test comes when calamity comes. When an emergency exists, and unexpectedly he is called to meet it, with, perhaps, comparatively speaking, nothing at hand, excepting his own bare hands to meet it with.

In considering this subject, then, we draw valuable lessons as we study the conditions, magnitude and surrounding circumstances under which we are liable to be placed. In studying it from a sanitary standpoint, as is our brief, but special aim, we must deal practically, lay special stress upon practical work, whereby the greatest degree of proficiency may be realized in the least possible space of time. Under such circumstances, but little time or opportunity is there for speculating or theorizing. Systematizing is a necessity, but undue delays are hazardous. What is to be done must be done with promptness, or else the golden opportunity is lost, and one is left to suffer the chagrin and mortification of a failure.

The emergencies liable to confront sanitarians are most perplexing, and embrace complications that often tax the mind to its utmost endurance. His is to skirmish and to battle with the most formidable and treacherous of foes—pestilence—upon which the eye of public safety ever rests with grave and nervous suspicion. To the indifferent this may seem impractical, an idle waste of time and a useless expenditure of means, but the close and studious observer of the origin, development and fatal course of epidemic diseases can see differently, can readily understand the sanitarian's worth, and his close alliance to the best interest of public welfare. It is not to be presumed, however, that though under the most favorable circumstances he is capable of obliterating epidemic diseases. This would be superhuman, but the experience and actual results of past instances are conclusive that he often has it in his power to prevent or to suppress the same, by due and timely destruction of materials liable to produce the germ. This, then, is the object *per se* of the sanitarian and opens before him an inexhaustible field for speculating, theorizing, as well as for practical and protracted labor, and he can hope to succeed as he is best able to draw his plan of operations from theories long and well established. Thus we see the necessity of the study, and the worth of a mind richly stored with knowledge; knowledge that may be utilized and reduced to practice at will, thereby the better qualifying him to meet the imminences of the most trying moment. The condition or cause for operation presents a specific, also a general, aspect. The specific lies in the germ itself. To discover and to trace it to its origin is a duty most incumbent. This once accomplished the great burden is removed and the pest short-lived. But here we are confronted by a most complicated, uncertain, if not hopeless, task. The analysis of well water, sinks, cesspools, etc., has often, it is true, revealed the secrets of typhoid and kindred diseases, but the secret of the more wide and rapidly spreading epidemics seems to be as much a mystery to the scientific world to-day as it was thousands of years ago, and irrespective of the great advance in science, seems to run the same fatal course as has been so characteristic of its history. Thus, as the last, if not the only hope of success, he is driven to consider the general condition, as it lies before him—a vast field to explore, to renovate and to relieve of all substances liable to produce danger. Then the magnitude of sanitary work is plainly to be seen, and in the emergency of flood-time nothing is more liable, in fact most certain, to confront the sanitarian. The uncontrollable floods are upon us at an unwarned moment, regions are devastated, towns, villages and cities submerged. The open country a sea of backwater, cesspools, etc., overburdened with the garbage, sewerage, filth and refuse of the flood track, to decompose, to diffuse and to contaminate the air with its poisonous germ, and to meet this condition, is to be embarrassed and harrassed by surrounding circumstances most discouraging.

So gigantic an undertaking requires equally as gigantic means at command. This is seldom in readiness—oftentimes unavoidable— and he is master of the situation as he is best constituted to grapple with and to surmount difficulties. The floods of 1889 in the Susquehanna and Conemaugh valleys are illustrative, and demonstrate beyond a question the value of sanitary work. Though surrounded by the most trying and embarrassing circumstances, yet it can be truthfully said the great emergency was most heroically met, the threatening pestilence abated, and the world's history left to record no greater, no more distressing calamity, no greater undertaking, and in fine no more complete and successful results attained.

SOME OF JOHNSTOWN'S LESSONS.

By **BENJAMIN LEE**, M. D., Ph. D., *of Philadelphia*,
Secretary of the State Board of Health of Pennsylvania.

The State Board of Health of Pennsylvania has firm faith in the value of sanitary conventions, believing that they subserve these two useful purposes: *First*, The improvement of the sanitary conditions of the city in which the meeting happens to take place, by leading the citizens to seriously consider the particular evils which threaten the health of the community; and, *Second*, the more general, and perhaps more important object, of educating public opinion as to the necessity for sanitary reforms, and thus acting by reflection on the legislatures of the several states, and leading them to pass the necessary measures to initiate and carry out such reforms.

On the thirty-first of May, last, the board was holding such a convention in the "Iron City." If the board had stationed a hand-organ with a monkey in front of the hall in which its sessions were held, and posted a placard stating that the Brown-Séquard Elixir would be administered free of cost, the meetings would have been thronged: but, as it had no higher aim than to teach the good citizens of Pittsburgh how many valuable lives might be saved every year, and how the general longevity might be increased by the adoption of certain simple rational rules of living, and of civic administration, the many admirable papers which were presented were read to meager, though intelligent and deeply interested, audiences. It must be allowed that there were special reasons which made the attendance smaller than it might otherwise have been. Much of the time it rained copiously. The Allegheny river was rising rapidly and becoming turbulent, and, on the second day, the immense mass of wreckage which it swept along excited universal interest and drew crowds to the shores and the bridges to watch anxiously for indications of human habitations and loss of life. The suspense was not long. Rumors of wash-outs on the Pennsylvania railroad were soon followed by the more definite report that the mountain city of Johnstown had been partially destroyed by flood; and the following morning, which was Sunday, left no room for doubt that a disaster without parallel in the annals of the country had been caused by the bursting of a dam, and that no figures under thousands would be adequate to count its victims. The State Board of Health at once set itself to work to avert the dangers to life and health which, in the past, have invariably followed wholesale drownings of men and domestic animals, and destruction of homes. In these efforts it was supported to the fullest extent by the chief executive of the state, who did not hesitate to assume the risk of the immense burden of a loan of $400,000 to meet the expenses of the gigantic work, when it was found that the state treasury could not be drawn upon for the purpose. With what success it labored, the health conditions of Johnstown during the following summer must be the witness.

When the board was first established, four years ago, it issued an address to the people of the state defining what it felt to be its scope, its duties and its responsibilities, in the course of which the following language occurred: "In an immense territory like our own, larger than that of most of the nations of Europe, with its great diversity of surface, its lofty mountain ranges and its vast forests, wonderful opportunities exist for sanitary engineering on an immense scale—determining in what directions water-sheds shall be encouraged and in what diverted, to what extent private corporations are to be allowed to jeopardize the health of large sections of the country by obstructing natural water-courses, for the purposes of manufacture or navigation; deciding how far certain forests act as natural barricades against devasting winds, and should therefore be left untouched by the axe, in order to maintain a permanent average rainfall, and thus avert droughts, cyclones and floods, and how far these interfere with the circulation of healthful breezes, and may therefore be with benefit removed." This was but one of the many neglected functions of state government which it felt that it might properly be called upon to assume in the absence of any other authority charged with its performance. If there was ever a state in which self-government was pushed to the verge of absurdity, in which affairs are allowed to manage themselves in a happy-go-lucky sort of way, every man for himself and the devil take the hindmost, that state is the great, the venerable, commonwealth of Pennsylvania. Hence, three great evils have been allowed to go entirely unchecked in her mountain regions:

First. The reckless destruction of forests, leaving the mountain sides bare and denuded. From this, two results: The substitution of cataclysmal downpours from the clouds for the gentler rains which characterize well-wooded countries, and the almost instantaneous passage of this water into the large water-couses, in place of its absorption by the foliage and roots of the trees of large forests.

Second. The construction and maintenance of large dams without proper governmental oversight; and,

Third. The encroachment of manufacturing and other companies on the beds of streams, thus rendering them too narrow to allow storm-waters to escape, and making devastating floods a thing of course. In the light of Johnstown's disaster, to the production of which all three of these conditions contributed, this utterance of the board seems almost prophetic. But it was as it was in the days of Noah. The warning fell on heedless ears. "They did eat, they drank, they married and were given in marriage, until the day that the flood came and detroyed them." To most of those who took the trouble to read the address, these suggestions undoubtedly seemed wild and impracticable, and it will probably be many a long year before these three most evident of Johnstown's lessons will be sufficienly well learned to lead to such legislation as shall render a repetition of Johnstown's calamity impossible. But, given a similar calamity, what are some of the lessons which she can teach us out of the bitterness of her experience?

Next to that of food and clothing, provision for which it would be impossible to make in advance, the want most urgent, and that which interfered most seriously with the rendering of relief during the first two weeks following the disaster, was that of bridges. Communication with the different portions of the flooded district was well-nigh impossible. For several days, two small, leaky skiffs were the only means of transporting food, laborers, coffins and corpses to and from the Pennsylvania railroad station and the ruined city. The first really substantial relief to this painful embarrassment was that afforded by the United States engineer corps, who came, bringing boats for the construction of pontoon bridges. The thought naturally suggests itself that a pontoon train should form a portion of the equipment of the militia of each state, and that an engineer corps should be established which should be drilled in the construction of such bridges, with the same regularity that characterizes the instruction of other arms of the militia service in the life-destroying branches of the art of war.

The second great need was that of shelter. Like Robinson Crusoe on the desert island, having obtained the wherewithal to cover their backs and stay the cravings of hunger, these unfortunates had to look about them for habitations. The comparatively few houses which were left in a habitable condition were crowded to repletion. Many of them contained the remnants of four or five families in addition to their ordinary occupants. Under these conditions it required the utmost vigilance on the part of the board to prevent the occurrence of the diseases which are known to accompany overcrowding. This want was measurably met by the flood relief commission in the purchase of ready-made houses from the west, designed for persons forming temporary camps. It was difficult, however, to obtain a sufficient supply of these on short notice, and they had to be brought a long distance. It would be a wise move on the part of state legislatures to procure a considerable number of such portable dwellings, and keep them stored at different points, to be ready for immediate use in such emergencies. In the event of the occurrence of epidemics they would serve an admirable purpose as hospitals. The engineer corps might also be instructed in the most expeditious manner of putting them together. Being comparatively inexpensive, they could be burned after being used by patients with contagious diseases.

The third difficulty which confronted the state board of health was the absence of any local sanitary authority or organization. There was no nucleus on which to form a sanitary corps. The whole machinery had to be created *de novo*. But for the prompt arrival and intelligent assistance of the sanitary police of the cities of Pittsburgh and Allegheny, the task would have been much more perplexing. The services rendered by these officers in house-to-house inspection, and in the distribution of disinfectants, and in instructing the new recruits of the corps in these duties, cannot be too highly estimated, and contributed largely to the prevention of sickness. Pennsylvania is one of the few states which still lag far in rear in the matter of sanitary organization. Her legislature makes no provision for the establishment of boards of health in any places having less than ten thousand inhabitants or not posessing a city charter. In several instances where the board sent disinfectants to flooded villages the inhabitants refused to remove them from the cars, and there was no local authority of any kind to make the proper use of them. The dream of the state board of health, as expressed in the address above referred to, that "there shall not be a hamlet in the entire domain of the state without its regularly constituted health officers" is apparently as far from realization as ever.

Such organization would also obviate to a great extent another obstacle with which the board had to contend, viz: the difficulty of obtaining recognition and compelling obedience on the part of local subordinate officers. Johnstown was like a place in a state of seige. *Extempore* policemen, armed with ball clubs, muskets, shot-guns and pistols, and decorated with a rude tin star, seemed to spring out of the ground at every turn like the dragon's teeth sown by Cadmus, and made it very uncomfortable for one not well supplied with passes from the half dozen officials who ruled in the different sections of the devastated region. The delay thus caused was often a serious interference with conduct of business. To avoid this, I adopted the following device: In the Pennsylvania railroad station, which was one of the first established morgues, and the floor of which was covered with nude bodies of both sexes and all ages, I fortunately found a can of black paint and a brush designed for marking freight. Tearing a strip from a roll of white muslin, in which the dead were being hurriedly enwrapped, I painted on it the words "Sanitary Corps," and pinned it to the front of my hat. This worked like a charm, proving pass-word, countersign and open sesame to the most obdurate guard. The suggestion that occurs to me in this connection is this: That in each state there should be adopted a uniform for sanitary officers, or, at least, a sanitary badge which would at once be recognized by all who saw it, in all places and under all circumstances, as conveying authority, and entitling the wearer to proceed to the performance of his important duties without hindrance. The value of such a provision was made strikingly apparent upon the arrival of the uniformed sanitary police from Pittsburgh. The people at once manifested confidence in them and listened respectfully to the suggestions and orders—while they had been inclined to be suspicious of the motives of the un-uniformed men, and to resent their interference—and the special constables rarely stopped them.

No one who was present in Johnstown before and after the time at which the state militia were commissioned to assume control of operations for the abatement of the great nuisance, under the supervision of the board, could have failed to notice the immense change for the better which at once took place when General Hastings assumed command. Order out of chaos, a sense of security, as contrasted with a feeling of apprehension and uneasiness, amounting almost to a reign of terror—more work done and better done, with fewer men at work, because more thorough system prevailed, the work was more intelligently arranged and the authority was centralized. Johnstown will ever be a monument to the efficiency of the National Guard of Pennsylvania—a body of citizen soldiery, existing not simply on paper and fit only for parade, but ready to take the field at a moment's notice, perfect in all its departments, prepared not only to repel invasion or repress riot, but to undertake the management of a great work of relief, requiring very varied attainments of administration. It is not too much to say, and it is saying very much, that the guard, from the general in command to the lowest subaltern, proved itself equal to the emergency. The annual encampments, introduced of late years, have undoubtedly been the principal factor in familiarizing both line and staff with the routine duties of camp life and administration. The value of a well-organized militia is, therefore, one of the important lessons of Johnstown.

But how did the guard come to be upon the scene? What justification was there, in a time of profound peace, in the absence of rebellion or riot, in defiance of the express provisions of the state constitution, for placing a military force with the entire general staff of the state in control of a territory, as large as some European principalities. It was simply because the legislature, yielding to the importunities of certain sanitary cranks had, a few years before, had the wisdom to create a state board of health. This board posessed the authority to declare the conditions existing at Johnstown, and in the valleys of the Conemaugh, Kiskiminetas and Allegheny rivers a "nuisance prejudicial to the public health," and to call upon the chief executive of the state to furnish men and means for its abatement. Without this declaration the state would have been powerless to interfere, unless extra-constitutional measures had been resorted to. The presence of the Guard at Johnstown was a striking exemplification on the grandest scale, of the truth of the proposition contained in the address of the board referred to in the opening to this paper that, "It is no empty figure of speech, by which we call disease a public enemy. It requires to be met with organized resistance, and this resistance must be directed by a responsible head. When pestilence threatens, that head must be clothed with powers analogous to those of a general when the foe is at the gates. Sanitary law, in place of martial law, is then proclaimed; and what are, in times of general health, recognized as sacred rights of person and property, are sternly set aside. When such emergencies arise, the board confidently looks to the sound sense and self-control of the people to lead them to submit cheerfully to whatever temporary inconveniences it may be deemed necessary to impose." Such absolute powers the board exercised at Johnstown. Such sound sense and self-control were displayed by the people of Johnstown under the most trying circumstances, leading them to acquiesce in restrictions, which may have appeared to them harsh and unnecessary. Whatever, therefore, may have been the faults, failures or shortcomings in the administration of the board during its period of occupancy, it may at least be credited with having taught the lesson, and it is the last to which I shall advert, that a state board of health is the only constituted authority which can legally cope with such an emergency, and that its powers in the premises must be ample and supreme. Rarely has the truth of the motto of the board, which has also been chosen as that of this convention, received a more triumphant vindication. Let it be the rallying cry of the sanitarian:

"*Salus Populi Suprema Lex.*"

SOME OF THE THINGS WE EAT AND DRINK.

By Professor JOHN A. MYERS, *of Morgantown, W. Va.*
Director of the West Virginia Agricultural Experiment Station.

It will scarcely be expected upon an occasion of this character that I should deal with the more theoretical questions involved in protection from diseases incident to the use of unwholesome and adulterated food and drink. The greatest good, I apprehend, to be derived from meetings of this character is in the stimulation of the growth of a sound and uncompromising public opinion upon sanitary affairs. With this in view, I desire to touch upon several matters connected with our food supply, which I am confident should receive the serious consideration of all good citizens.

There is a suspicion abroad in the land that much of the food offered in the markets is adulterated; that it contains foreign substances which, either immediately or remotely, affect the health of the people. It has been shown that there are two causes leading to this:

First. The avarice of the manufacturer or dealer.

Second. Their carelessness or their inability to avoid the introduction of poisonous substances in preparing certain articles of luxury.

By far the greater amount of adulteration of food and drink is caused by the profit that it gives to the manufacturer or dealer.

The art of adulterating lard or butter, olive oil, cheese, beer, syrup, honey, confectionery, wines, vinegar, flour, baking powders, spices, cocoa, chocolate, coffee or tea so as not to be readily detected necessitates, in many cases, the employment of scientific skill. The separation of lard and beef fats into their several ingredients so that they may be employed for the adulteration of other articles of food, necessitates the employment of the highest kind of chemical skill, and it is only when this technical skill is employed that this adulteration becomes an important factor in the commercial transactions of the country. Many of the adulterations in the market are not harmful to the health, but are simply a species of fraud practiced upon the purchaser, the profits of which are divided between the dealer and the manufacturer of the spurious goods. Our hotels will not allow it to be known that they are using oleomargarine upon their tables and in their kitchens, and our fancy grocerymen take as much pains as possible to conceal the fact that they are selling artificial butter for the genuine article. The milkman who waters his milk is not nearly so dangerous as the milk dealer who removes the cream and adds lard or oleo oil to the skim milk, and sells it again for the genuine article. I do not know that butter made with a strong admixture of oleomargarine by a skilful and careful manufacturer is worse than country butter containing the accumulated extracts of badly washed milk vessels and milk contaminated by the foul odors of the kitchen where it may be kept standing, or cow stables where the animals may be kept. In the one case, it would be considered as adulteration. In the other case, public opinion would consider it as necessary impurity. Cheese fattened by the addition of lard, oleo oil, or cotton-seed oil, which would be considered as adulteration, is perhaps a better article than cheese from which the cream has been extracted by the dishonest cheesemaker. Beer sweetened by glucose and flavored with malt and hop substitutes, and preserved by antiseptics, some of which may be dangerous to health, and certainly none of them conducive thereto, may be relished by some, but surely the great mass of beer drinkers would prefer to have an unadulterated, straight, genuine article.

When a man comes into a store and calls for syrup, he would much prefer to get the article called for to artificial glucose, and when he asks for honey, he wishes honey rather than glucose or cane sugar, and when he goes into the confectionery he would prefer to have the genuine sugar sweets to the artificial glucose, to which starch, artificial essences, poisonous pigments, terra alba, gypsum and other matter intended to impart weight, flavor or color have been added.

When a man calls for vinegar, he does not wish diluted sulphuric acid, and when he calls for flour or bread, he does not want it loaded with mineral matter or alum.

When a man wishes to buy baking powders, he prefers the genuine article to starch or alum, and if he buys spices, he does not wish flour, starch, turmeric or buckwheat hulls. Cocoa and coffee are none the better for their adulteration with sugar, starch and flour; and coffee is certainly the worse for having introduced into it chicory, beans, peas, rye, corn, wheat, coloring matter and grains of clay. Tea containing exhausted tea leaves or leaves of other plants to which artificial indigo, prussian blue, turmeric, gypsum, soapstone and sand have been added certainly is not as wholesome as the genuine article. Canned goods into which antiseptics have been introduced, or into which metallic poisons have fallen, are not used if known, and pickles turned green by the salts of copper, while admired for their color, certainly do not strengthen the digestive system of any man.

It is, however, not so much the question of fraud upon the public that I wish to reach at this time as the question of danger to health. If men will submit to being regularly and systematically swindled when ample means of protection can be provided at a nominal cost, I do not think that it is a matter of any special concern. It was Barnum, I believe, who said that the American people love to be humbugged—they really enjov a moderate amount of it—and I presume few could speak with more certainly upon this point than Mr. Barnum. But the American people do not enjoy being shot at from ambush, and being stabbed in the dark or waylaid at night. Murder and robbery in any community, if unpunished by the courts, is very likely to be suppressed by vigilance committees. But public sentiment has not been educated to that point which will prevent the grocer, the butcher, milkman or saloon keeper from slowly poisoning our health and sending one after another of our dear ones to their long resting place. If the butcher were to stand in his shop and occasionally shoot a member of your family, pubiic opinion would sustain you in training a well-loaded Winchester rifle upon him, even if the law failed to reach him. But he may poison your whole family, and frequently does do it, by supplying meat infected by trichinæ, tape-worm, the germs of tuberculosis, and other diseases which may be traced in many cases most directly to meat supplied from diseased animals. What would the public say if he were to poison that meat with arsenic which, in many cases, would only be a little more prompt in its action, not more certain in its results.

If such be the condition of affairs at the butcher shop, what shall we say of our milkmen? The milkman who skims his milk and then waters it is a saint, and deserves a front pew among the most pious, compared with him who brings the milk of diseased cows—such as those suffering from tuberculosis, ulcerated udders, diseased joints or swollen glands, or from cows fed upon the decomposing swills and slops of various manufactories, or waters his cows with water laden with all of the disease germs flourishing in sewerage. There should be very stringent laws passed and enforced against this class of citizens who deal out death at the rate of eight cents a quart to our children. What do they care if a few children die of diphtheria, scarlet fever, typhoid fever, or have their blood poisoned by the germs of consumption. The great problem is to secure the eight cents a quart, and have as many quarts as possible.

I look upon public opinion that is so misguided or so lethargic as not to suppress daily crimes of the character hinted at as very much to be regretted.

Time will not permit me to notice more articles of food. I will next touch upon the water supply, and in this I strike a fruitful source of disease and death.

Science, in the hands of the chemist and microscopist, may do much to indicate the causes of typhoid fever, enteric diseases and malarial complaints; but until public opinion is developed to such a point that our people will no longer permit their drinking water to be contaminated by sewage, and their homes poisoned by sewer gas, and the foul odors of decomposing garbage piled in all of the neighbors' back yards, and in all of the alleys of the city, science cannot do much. What cares the average ward politician whether the springs, wells, hydrants, cellars, back yards and commons in his ward, or all over the city are polluted, and the water drank by the people and the very air breathed by them is rendered foul with the refuse of the city, so long as a few of his political henchmen may be permitted to shirk their work, thereby making a few dollars a month more than they would if the work of cleaning the city were honestly and thoroughly done. What is the difference to him if the death rate of the city rises to fifty or one hundred per thousand so long as public opinion will not force the proper officers to do their duty.

What magnificent economy it is to bury fifty or one hundred of your population because some one raises the cry of too much expense to clean the city—too much expense to suppress the sale of unwholesome food—too great injustice done to the poor butchers, grocers, saloon men and milk men—too heavy expense to dispose of the citizens' garbage. Away with such economy! Away with such politics! Any sensible man in this country is willing to be taxed if you convince him that the money is being judiciously expended for the good of the public. If he does object, he will find himself in the minority, and I believe Mr. Reed says that the majority must rule in this country.

Scientific men, I think, have shown beyond doubt that many of the diseases to which our race is subject are contracted from the animal food supplied to our people, either as meat, milk, butter or cheese. It was stated last year upon the floor of the United States Senate that statistics showed that 500,000 children die annually in our cities in this country from the use of diseased milk. Dr. Laws states that in some country districts of New York can be shown large herds of cattle with ninety per cent. subject to tuberculosis.

In the case of consumption, Villemin, Janewaw, Toussaint, Koch and others have carried on exhaustive series of experiments, demonstrating beyond doubt that the bacillus tuberculosis can be readily communicated from one animal body to another. Koch and his assistants have isolated the bacillus tuberculosis and after cultivating it through successive generations for months in blood serum, found in every case where the purified bacillus was introduced into the circulation of healthy animals, the disease was reproduced.

Galthier has demonstrated that this bacillus retains its activity at temperatures ranging from eighteen degrees below freezing to one hundred and eight degrees Fahrenheit. That it resists the action of water, dessication and strong pickle, so that it may occur even from the use of corned beef or dried beef from animals infected with this disease. Lydtin states positively that it may be taken into the lungs through the inspired air, or into the digestive system with food or water. Ballinger produced tuberculosis in pigs by feeding them for a long time on milk from tuberculous cows. But why should I continue to cite experiments which have demonstrated beyond reasonable doubt the fact that a large share of the incurable diseases are spread among our people by the use of animal food containing the diseas germs which develop and multiply in the human body until it literally swarms with them.

The bacillus may, and generally does, attack the lungs and lymphatic glands, but is, by no means, confined to these organs. These germs may even enter through a wound as reported by Taschering in "Reports of the Progress of Medicine" for 1885, where a young woman became infected from some of the sputa raised from the lungs of a consumptive patient accidently getting into the slight wound in her finger which had been cut upon the broken vessel containing the sputa.

It is more than probable that where children are fed upon the milk from tuberculous cows serious intestinal disturbances may occur.

Looking at the question of adulterations from a commercial standpoint, it occurs to me that it makes no difference to this meeting whether sugar, coffee, milk, bread, butter, cheese, canned meats, pepper. spices, pickles, chocolate, tea and every other article dealt in by the groceryman or the liquor merchant is adulterated to a greater or less extent. If people are willing to pay full price for half quality of goods and be swindled in the value of their purchases, anywhere from two per cent. to fifty per cent. or more, without protest, and without any attempt at correcting the evil, we need not bother ourselves about it at a sanitary convention. On the other hand, it becomes a matter of great interest to us when we find the health of the community menaced by these adulterations, and when we find the adulterations consist of indigestible or poisonous matter, or when the feed products are injuring the health of the people by reason of diseases propagated or spread thereby, then it is proper for us to enter our most vigorous protests. I do not believe that men should be permitted with impunity to undermine the health of a single fellow-being, whether it be the infant nursing at the bottle or the old man tottering on the grave. I am disposed to resent a man's setting a death-trap for me or for my family, either intentionally or ignorantly, and I believe that some system of protection to the public should be inaugurated that will suppress the traffic in adulterated groceries, diseased meats, unwholesome and contaminated milk,and check the constant tendency to poison the water supplies of our great cities by sewage and city wastes being dumped into our rivers. Vigorous and positive laws should be enacted and enforced against every one who jeopardizes the health of innocent and unsuspecting fellow-citizens by the sale of any manipulated product whatever.

We are likely to be met by three flimsy arguments in urging a meaure of this kind:

First. One class will oppose it on the ground of expense. There is a class of people who would be willing to suppress every measure toward the protection of the health of a community, and would be willing to see hundreds of people die from the effects of bad sanitary conditions rather than spend a few hundred or thousand dollars of the public funds in suppressing or removing the exciting causes of disease.

Another class will oppose it on the ground that it increases the office-holders in the community, and anything that will give the party in power political patronage they argue should be suppressed, no matter how much may good result to the community or what great benefits may be derived from the inauguration of proper sanitary reform.

Then we have a third class, who oppose measures to regulate anything of this kind, because they are themselves engaged in selling or in manufacturing the articles complained of. They have money to back their pretensions. They wear the garb of respectable citizenship. They conspicuously regret very much that the health of so many people should be endangered by these adulterations, and that it is now almost impossible for persons to secure pure articles of food. But they say, "Shall we raise the price of our food products by compelling our manufacturers and dealers to sell pure articles?" They tell us that the price of milk will have to be raised, and the price of butter, cheese, meat, sugar, and all of the groceries in the market would have to be raised if the manufacturers were not permitted to adulterate them so as to compete with one another. Think of it. They are persistent and noisy in their declarations that every man should be permitted to buy and sell anything that he wants to, and can we, say they, in this great country, afford to assail the personal liberties of men who are engaged in carrying on the commerce of this country? They want no more class legislation, and set up the claim that an adulterated article, if not actually injurious to the health, should be permitted to be sold whether the purchaser is aware of the character of the article or not. Their argument is to reach the pocket of our citizens and through that pull a veil over the keen eye of reason.

But what shall be done? Can public opinion be so stimulated that the people will rise in their might and adopt measures to suppress these evils? Are they willing to bear the expense of having these manufacturers and dealers in adulterated goods detected and prosecuted, and the business suppressed? Are they willing to have adulterated milk and milk from diseased cattle destroyed,and the men who produce and sell it punished? Will they sustain the health officers in making regular inspections of the dairies in this and other communities and suppress these hot-beds of disease? Are our people willing to have the animal products offered at the shambles inspected, and the diseased, adulterated and spoiled goods destroyed, and the men who knowingly deal in them fined or otherwise punished? Will the public opinion of this city sustain the health officer or board of health (I suppose it has a board of health) in suppressing the cause of diphtheria, scarlet fevers, and all that long line of diseases induced by the contamination of the water supplies and the failure to remove the refuse of the city and to properly control the sewerage? Why not authorize the proper authorities to secure the proper scientific skill to detect and suppress these evils.

There is a tremendous responsibility resting upon our citizens, and it is hoped that what has been said in reference to the adulteration of food, to the spread of disease, to the suppression of the sale of such articles, to the enactment of laws and their enforcement, may receive the most serious consideration of the citizens of the states represented in this convention.

FLOOD DEBRIS DANGEROUS TO HEALTH, AND HOW TO DISPOSE OF IT.

By SPENCER M. FREE, A. M., M. D., *of Beechtree, Pa.*,
Inspector to the State Board of Health of Pennsylvania.

Should I remark just here at the commencement of this address, that all the time, money and thought that has been expended in the endeavor to prevent epidemics after floods, has been time, money and thought wasted, I should make a statement that would cause criticism if it did not even evoke sympathy in my behalf for exhibiting such lamentable ignorance of these important events in the history of the world.

Yet, if I made such a statement it would be much nearer the truth than the opposite one would be.

For, from the deluge down to the present time, no authentic account has been given of any epidemic disease (unless malarial diseases be regarded as epidemics) caused purely by the materials left by floods, and not more properly and truthfully traceable to other causes.

To properly understand the topic proposed for discussion we must enter a little into the subject of definitions. Therefore, by "flood débris dangerous to health," I mean, those materials, local and foreign, (from some other place) which are left in any locality after the disappearance from it of water that has submerged lands not usually coursed thereby, which materials directly or indirectly prevent the parts of the human body from freely performing their natural functions—in other words, from being healthy.

A brief glance at the history of water floods, which are the ones to which our discussion is limited, shows us that they are not unusual occurrences. Nor are they trifling accidents in their immediate or in their remote results. If we begin with the deluge and accept the account of it as given in Genesis, both the results mentioned above are incalculable. Quite certain is it that no serious epidemic disease or serious disease of any kind followed this flood, although all conditions were favorable to such an outbreak.

Sanitary science was not so well understood then as it is at the present time, nor was disinfection so thoroughly practiced.

In fact, so far as the reports show, the people knew nothing of either of these subjects, hence no serious diseases occurred, or this convention would not be a necessity—not even a possibility.

These destructive agents are not confined to any country or locality. Europe, Asia, Africa, have all felt their terrific power. Our own beloved land has, time and again, been called to mourn the loss of life and property consequent therefrom, but never before to such degree as in May, eighteen hundred and eighty-nine, in the beautiful valley of the Conemaugh.

Colin, in his "Maladies Epidemique," relates that it is said that the Arabs caused the death of over 12,000 of the inhabitants of Bassora by sickness, by making the river to overflow. But it is not shown that this is a true historical fact, nor can any information be obtained as to the kind of disease.

In 1748 the Dutch compelled Austria to quickly make terms of peace by inundating their country, but sickness, following the disappearance of the water, compelled a second inundation.

No accounts are obtainable as to the character of the diseases, but from the fact that they were ended by the second inundation we conclude that they were malarial in origin.

Great increase in the amount of sickness at Strasbourg, following the flood of 1824, is recorded, but it is definitely stated that it was entirely due to malarial diseases. In China, where floods are frequent and severe, causing annually the loss of thousands of lives by drowning, very little sickness of any kind follows.

In India, where floods and inundations are also frequent occurrences, they are not followed by epidemics. Dr. C. R. Francis, surgeon general of the English army in India, says that "no unusual sickness follows these inundations."

In this country the lower Misisssippi furnishes one of the most fruitful fields of study, as inundations are very frequent.

The subject has been thoroughly investigated by Prof. Chaillé, of New Orleans, and his conclusions are "that floods are not injurious but beneficial, by covering up the soil and cleansing the streets."

New Orleans is probably the most afflicted city in the United States as regards floods and inundations

Its peculiar situation renders it subject to overflows from both the river and lake. Since its founding, in 1718, there have been no less than seventeen severe floods, and although yellow fever is epidemic, and cholera has been frequent, neither of these diseases have been worse after floods.

Only once, in 1846, were dysentery and bowel troubles increased. The flood occurred in May; the dysentery in July. It also prevailed as badly in districts not flooded. Other causes seem to have had greater action than the débris of the flood.

The worst flood ever known, in 1849, when the city was covered with filth forty days. No bad effects on the health of the city were found.

In 1856 the streets in the lower district were covered several feet deep for over a week, and no ill effects.

In 1871 eleven thousand people were flooded out, and one observer states that the district in which these people had their houses "presented the appearance of an offensive and putrid cess-pool," the contents of cess-pools, sinks, stables, garbage, dead animals, and all the usual materials consequent upon floods were found throughout the city in abundance, but the health continued good.

Not even malarial diseases were more frequent. In 1871 the deaths from malarial diseases were but thirteen to the thousand, while in 1870 they were twenty-eight to the thousand. In this year disinfection was practiced.

In 1881 an overflow of a similar nature occurred and said to be fully as bad. No disinfection was practiced, yet we find Dr. Holt, one of the sanitary inspectors, saying: "As the water receded I carefully inspected the ground and was struck with the increased cleanliness of the district." The event would seem to suggest an overflow as a providential sanitary measure.

Thus we find we must look elsewhere than to New Orleans to find proof that flood débris is responsible for epidemics of disease. The investigation has been made carefully for the whole lower valley of the Mississippi and the only increase is found in malarial diseases; but as this is not found after all inundations and as it is found in years when no overflows occur, there is certainly room for doubt as to the cause being due to the results of the overflows.

The Johnstown flood of 1889, so terribly destructive of life and property, covered the Conemaugh valley for miles with all manner of flood materials and dead bodies. No epidemic (at any rate of a serious nature) has followed. The bowel troubles and dysentery were not much greater in amount than usual, and when the subject of food, houses, clothing, mental condition, etc., are considered, we do not feel that the flood débris is very much, if at all, responsible. Indeed the surprise has been expressed by many sanitarians, and by many more who are not of this class, that so little sickness prevailed immediately after the flood, and that so little has developed since that time.

How much this may be due to the speedy supply of food, clothing and shelter, that was furnished the unfortunate people; the prompt, thorough and long continued-sanitary measures instituted by the state board of health; the rapid removal and destruction of the vast amount of débris and dead bodies, no one can say. But while giving all praise to these measures and to those who so nobly and so self-sacrificingly labored in these causes, we must, when viewing the question as honest searchers after truth, confess that the natural tendency was the same here as in other places and times, not to have outbreaks of diseases after floods.

Any one who saw the condition of things at Johnstown could not deny that all manner of flood materials were present in great amount, and that if they are dangerous to health, the health of the city and valley was in constant jeopardy for a long time. The fact that in the presence of all this threatened danger the health maintained itself almost unharmed, argues that the danger was not so great after all.

It was very clearly brought out in the celebrated Lennox trial that many mistakes existed in the human mind in reference to the relations existing between floods, inundations, overflows, stagnant water, swamps and diseases, especially in reference to the former as causative agents of the latter.

Hirsh, in his great and admirable work, the "Hand-book of Geographical and Historical Pathology," teaches that the diseases which are commonly expected to follow floods, namely, the acute infectious diseases—such as typhoid, yellow fever. cholera, scarlet fever, etc., are not influenced to any noticeable extent, if at all, by them.

The most frequent diseases for which floods are directly responsible are the malarial ones. The débris is not alone responsible however. There must be three things present before malarial diseases develop: a soil that is wet, but not submerged; an amount of organic matter, especially of a vegetable nature: a moderately high temperature.

Any of these conditions wanting will prevent the development of malaria. Floods, therefore, by bringing organic matter and by saturating the soil, predispose to malarial complaints, and these are the ones to be looked for and prevented rather than the acute infectious ones.

Having hastily, and rather superficially (because time will not permit an exhaustive investigation), examined flood and flood materials, and having found their general effect is not toward the production of ill health, let us look at some of the specific forms of débris and see their dangers.

Air is temporarily affected by dust, which, by invading the mucous surfaces, causes bronchitis, coryza, etc. This promptly disappears of itself—needs no special plan for removal. Odors soon fill the air, especially if much animal matter is decaying. This has no harmful effect other than producing nausea, and preventing labor for the removal of débris. This can be ovecrome by the free use of deodorizers, such as bromine, chloride of lime, carbolic acid, etc.

Dampness, another effect on atmosphere, is dangerous, in its tendency to produce catarrhal affections, rheumatism and pneumonia. This slowly disappears if warm sunshiny days follow, but numerous fires are to be recommended.

Water—the stream itself—is not dangerous unless used as a source of water supply, and not then if it is a large body of water. By this I mean that it is not any more a source of danger than under ordinary circumstances; but admitting that all streams used as a water supply are dangerous, the water from which should be boiled before being taken into the system.

As a matter of fact the water used at Pittsburgh showed a better chemical analysis just after the May flood of 1889 than it had shown before. What its bacteriological conditions were I do not know.

Springs and wells are injured, temporarily at least, by the large amount of foreign matter introduced, which is most likely not beneficial to health, for many stables, pigstyes, water-closets and their contents have been brought with the flood.

There is but one way that is cheap and easily applied for the removal of this danger and that is boiling before taking into the system. The sooner that people will learn that the only perfectly safe water under all circumstances is boiled water, the sooner an important disease-bearing element will be removed.

Foods—I refer to those remaining in houses and stores that have been wet, in many cases have been lying under the water for some time. They are dangerous. They may contain germs of disease carried from some neighboring houses or cess-pool, which, taken into the system, may reproduce itself. Hence, though it may be apparently economical, it is dangerous, and may prove in the end very expensive.

It is possible that an exception could be made in the case of foods that can be thoroughly washed and boiled before eating, such as beans, potatoes, etc. Much better, however, to err on the side of safety and destroy all such things by fire or by burying them deeply in the earth, than to use them and get sick.

Houses that are left standing are dangerous. They are partly filled with mud, etc., the carpets, furniture, clothing, etc., are saturated with mud and water.

The furniture can possibly be cleaned, as also carpets, clothing, etc., by thoroughly washing and drying and then thorough fumigation with sulphur or by subjecting them to high temperature for a long time.

The safer plan is to destroy them by fire; for no one knows but that some germs of scarlet fever, diphtheria, small-pox, or other diseases may be in them, and when dry, will float in the atmosphere and be taken up by the inmates of the house.

The cellar floors should be cleaned of mud, thoroughly washed in water, then in solution of bichloride of mercury and dried by heat and lime. The walls should be scraped clean, and washed with bichloride solution or with some other one equally good. Such houses are unfit for immediate habitation, and should not be lived in until they have been renovated and are thoroughly dry

I need not stop to enumerate the diseases liable to occur by immediate occupancy. In the same category with dress goods I would put muslins, clothing, etc., from stores. By subjecting them to thorough washing, drying and fumigating processes, they may be made safe. But the fact remains that perfect sanitation is destruction by fire.

Accumulations of débris in the streets and yards, such as boards, trees, lumber, houses of all kinds, etc., can best be destroyed by fire. They may not be dangerous to any great extent, and are not, so long as they are wet, but, like furniture and clothing, when dry, they may give off the germs of disease to the atmosphere, which in turn imparts them to those inhaling it.

The mud or dirt can best be disposed of by dumping into holes, and sprinkling well with lime.

Hay and straw are dangerous, when wet, we are told by some authorities. Especially is this true of straw. It will produce measles. The surgeon general of Pennsylvania has written on this subject, claiming that such is the case, and that he has demonstrated it on several occasions when in the state militia encampments. These materials can easily and effectively be destroyed by fire.

Decaying vegetable and animal matter. We saw sometime ago that these, especially the former, are, in the presence of moisture and heat, fruitful sources of those numerous and varied symptoms which, for want of better knowledge, we call malaria. Decaying animals are not the great source of danger that many think. Before decomposition sets in bodies are dangerous, in that they may transmit contagious diseases which they had at the time of death; but after decomposition has been well established they are, in all probability, free from danger, as the germs of decomposition destroy those of disease. Hence, if removed immediately after the flood, and any suspicion rests of contagious disease, the bodies should be wrapped in sheets, soaked in bichloride solution, and burned or buried at once. Either burying or burning is a safe plan for disposing of animal matter, but fire is preferred as the more effectual.

Driftwood, which usually is present in large amounts, can be used to burn up what materials are to be thus destroyed. When the flooded stream is small, the drift and animal and vegetable matter can readily be collected by means of a brattice across the stream. It allows nothing but very small drift to pass, so that all materials can be collected at this point and destroyed, thus protecting places below.

Floods will continue to increase in frequency and severity, so long as the destruction of forests continues. As sanitarians, we should, therefore, use every effort to stop the cause.

Our duty in regard to the flood itself, is to faithfully teach the specific dangers, and how to avoid or control them. But this is not all. We should also endeavor to correct the false impressions concerning the general tendency of floods to cause great epidemics of disease.

By this means we shall get rid of that abnormal mental condition which is so important an etiological factor in disease, and keep the people in such shape that they can calmly and intelligently meet the specific dangers and successfully overcome them.

SANITARY JURISPRUDENCE.

By Hon. J. B. SOMMERVILLE, *of Wheeling, West Virginia.*

"*Salus populi est Suprema lex*" is a most suggestive and appropriate motto for an association, one of whose objects is the consideration and discussion of the subject of "Sanitary Jurisprudence." This term is a comparatively new one, though it is one which if not strictly technical, is destined soon to become so. We, of the legal profession, have been provided through the skill, energy and ambition of our brother practitioners of the present and former generations, with numerous works on medical jurisprudence, seeking to apply the principles and practice of medicine to the determination and settlement of questions arising in the courts of law out of the relations of sex, the infliction of physical injuries and the like, but no one amid all the ranks of legal authorship—already crowded to overflowing—has attempted a systematic treatise on that branch of modern jurisprudence which aims to prevent the contraction and spread of disease, and to preserve the public health. This is a new and fruitful field. It opens up new avenues of thought and presents splendid inducements for the display of ability, learning and zeal. It is a subject of the greatest practical importance, and one which presents a dual aspect to the gentlemen of the medical profession. While they constitute the only class of individuals who possess sufficient knowledge and skill to enable them to successfully deal with the various methods of preventing diseases, they at the same time constitute the class who have the greatest interest in concealing the knowledge of such methods from the general public. And I pay the highest possible tribute to the humanity and philanthropy of the medical profession when I say that with all their interest in preventing an investigation of these subjects, they have not only inspired such investigations as have been made, but have actually made the investigations themselves. The common law—that great conservator of the rights and interests cf individuals—it is true. recognized both the right and the duty of the courts to exercise their jurisdiction and powers, to some extent, for the preservation of the public health: but, compared with our modern notions of these subjects, the jurisdiction and powers of the courts over them, as measured by the common law, was scarcely more than nominal, and extended but little, if any, beyond the power of preventing and abating such nuisances as injuriously affected the public health. The great march of progress of the human race has, in a great measure, carried the questions pertaining to the preservation of the public health from the judicial to the legislative departments of our governments, both state and national. The courts, always extremely, but in the main properly, conservative in their character and constitution, have dealt rather too cautiously with these questions to suit the vigorous and energetic leaders of modern thought and action, and to meet the demands of modern times; and hence it is that these leaders have looked for their remedies to the less conservative and more aggressive legislative tribunals. The first instances of this which are to be found in the mother country, to which we are indebted for so many of our laws and institutions, are the statutes of 51 Hen. III., to prevent the sale of unwholesome provisions; 1 Jac. I., to prevent the spread of the plague by preventing persons who were afflicted with it from associating with others who were free from it, and 26 and 29 Geo. II., providing for the quarantine of vessels sailing from infected countries. The Congress of the United States, as early as the 25th day of February, 1799, showed its recognition of the importance of the health laws of the various states by enacting, among other things, that the quarantine and other restraints, which shall be established by the laws of any state, respecting any vessels arriving in or bound to any port or district thereof, whether coming from a foreign port or some other part of the United States, shall be observed and enforced by all officers of the United States in such place.—1 Story, U.S. Laws, 564. These provisions, somewhat enlarged upon, are still to be found upon our Federal statute books.—Revised Statutes, U. S. S. 4792.

The instrumentalities through which the greatest influence is to be exerted in the direction of sanitary legislation, outside of the public and general discussion of these questions, are the legislatures of the various states. And the great *desideratum* in this direction is to perfect, unify, and harmonize, as far as possible, the legislation of the various states upon this subject. This will, of course, have to be done gradually and under great difficulties, and many and great perplexities will have to be met and overcome. The two leading questions to be considered in this connection are:

First. How far should the legislature go in enacting laws to protect and preserve the public health? and

Second. How far can it go, in view of the limitations on legislative power fixed by organic law?

The first is a question of policy and expediency which addresses itself to the enlightened judgment of the legislature.

The second is a question of law which addresses itself to the courts. As a matter of policy merely, the legislature cannot safely go far in advance of the sentiment of the general public on these questions, and this is especially true in this country in which the government derives its power and authority, at least theoretically, from the consent of the governed. All progress in this direction has been and must continue to be comparatively slow, although much has already been accomplished. Prior to the twenty-fifth day of March, 1882, the only legislative enactments to be found upon our statute books in the State of West Virginia, on the subject of the public health, were contained in Chapter 50, of the Code of 1868. They were taken bodily from the Chapter 197, of the Code of Virginia of 1860, except that the word "free" was stricken out of the statute by the legislature of West Virginia to make it conform to the new order of things produced by the great civil war, and the consequent abolition of slavery. They consisted of two sections. The first provided against the sale of diseased, corrupted and unwholesome provisions, and was modeled after the English Statute of 51 Hen. III., already mentioned. The second provided against the fraudulent adulteration of anything intended for food or drink, or of any drug or medicine, with any substance injurious to health. I am unable to state just when the first effort was made to secure additional legislation in this state, but I had the honor to be a member of the House of Delegates during the session of 1877, and at that session a bill was introduced in the House by Dr. M. S. Hall, of Harrisville, Ritchie county, which was known as "House Bill No. 70," and was "A bill to establish a state board of health."—House Journal, 1877, page 318. The measure met with very decided, not to say violent, opposition, and finally both it and its devoted author became the victims of a humorous but cruel joke. Section four of the bill provided that "It shall be the duty of the state board of health to revise and control the state system of registration of births, marriages and deaths." One of the members of the House at that session was Judge James H. Ferguson, of Charleston, known all over the state as a legislator of great experience, ability and shrewdness. The judge was the recognized leader of the house, and at the same time the implacable enemy of the bill, and when it came up on its second reading he moved to amend section four by striking out the words "of registration." The House, perhaps without perceiving the effect of the amendment, voted to strike the words out, upon which Judge Ferguson called for the reading of the section as amended. You can better imagine the frame of mind in which the patron of that bill, who was naturally an impulsive and irascible man, found himself, than I can describe to you, when Col. Peyton, clerk of the House, in a loud musical voice with which some of you are perhaps familiar, read: "It shall be the duty of the state board of health to revise and control the state system of births, marriages and deaths." It is needless to add that after this amendment had been made the bill was indefinitely postponed, many of its friends and supporters, including your humble servant, voting to postpone. But the friends of sanitary legislation were not discouraged by the result of their efforts, and continued to agitate and discuss the question at each subsequent session of the legislature, until, at the session of 1882, success crowned their efforts, and an act was then passed, which, with the subsequent amendments made thereto, has been pronounced by competent judges to be one of the most thorough and complete sanitary codes to be found in any of the states. This statute is so familiar to the members of the medical profession of this state, that for me to attempt to give a synopsis of its provisions would be a work of supererogation. An examination of its provisions will show how far the legislature of our state has deemed it expedient to go in the line of sanitary enactments. We have certainly taken a great step in advance, and yet no one who has given the matter due consideration, will say we have gone too far or too fast. Great progress has also been made in other sections of the country. And it can scarcely be doubted that, as the world progresses, and the subject of health—so essential to the welfare, happiness and prosperity of the human race—receives its due share of attention, still greater efforts will be made to secure its inestimable blessings by legislative enactments. There is one question remaining to which I have already referred, and which I now desire to briefly discuss, and with the discussion of which I shall bring this paper to a close, and that is: How far can the legislature go in the enactment of sanitary laws without trenching upon the limitations which have been placed upon its power by organic law? It may be laid down as a general rule in the construction of statutes that the legislature of any of the states of the Federal Union, has the power to enact any law which is not prohibited by the constitution of such state.—Coley on Con. Lim., 168; State *v.* Dent, 25 W. Va. 8-9. In the case of Osburn *et al.* *v.* Stanley *et al.*, 5 W. Va. 85, the supreme court of appeals of this state held that "While the legislature is governed by the spirit of the constitution, the courts cannot declare an act of the legislature invalid, unless its invalidity is placed beyond a reasonable doubt. A reasonable doubt must be solved in favor of the legislative action, and the act be sustained. The courts must be guided by the express words of the constitution and not by its supposed spirit. Whenever an act of the legislature can be so construed as to avoid conflict with the constitution and give it force of law, such construction will be adopted by the courts."

With these general rules to guide us, let us take a hasty glance at some of the adjudicated cases on the subject. In the case of the State *v.* Dent, already referred to, the point was sought to be made that sections 9 and 15 of our sanitary statute, are unconstitutional and void, because they are in conflict with article X, and with section 1 of article XIV of the Constitution of the United States, and also with sections 1, 2, 4, 10 and 11 of our Bill of Rights, article III of the Constitution of West Virginia. These sections of the health law prescribe certain qualifications for the practice of medicine and penalties for practicing without complying with those requirements, and it was contended that they were in conflict with certain fundamental principles of government recognized by the constitutional provisions referred to; but the court held, Judge Green delivering the opinion, that there was nothing either in the Federal constitution nor in the constitution of this state to prevent the legislature from enacting these sections and that they were therefore perfectly valid. And the reasoning which the court applies to these sections would seem to apply with equal force to the entire act. Indeed this may be regarded as a leading case on the general subject of the constitutionality of sanitary legislation, and shows that the courts will, in general, uphold such legislation unless it is in clear conflict with some provision either of the Federal constitution or the constitution of the state by which it is enacted. Judge Green, in his opinion in this case, cites a number of cases from different states, which, in a greater or less degree, sustain the conclusions reached by our court of appeals. An interesting and instructive case arose a few years since in the State of Iowa, and was finally decided by the supreme court of that state. I am indebted for a report of this case to the kindness of Dr. G. I. Garrison, the worthy and efficient health officer of this city, and Dr. J. M. Shafer, of Keokuk, Iowa, who has taken a commendable interest in everything relating to the preservation of the public health. The case involved the power of local boards of health to prohibit hog-pens, a very practical question, and one which, with many others of a similar character, may arise at any time, in the enforcement of the various provisions of law in the several states of the Union relating to the health of the general public.

The mayor and alderman of the city of Cedar Rapids, pursuant to an act of the General Assembly of the State of Iowa, appointed a board of health for that city, and the board of health thus appointed adopted and published a regulation in the following language: "There shall not be kept or maintained within the city of Cedar Rapids any hog pen or enclosure wherein swine are kept and fed by the owner, lessee or occupant of any property therein, save and except such pens as may be used for purposes of commerce only, and all such pens used for purposes of commerce shall be kept clean, and the owner, lessee or manager thereof, shall see that the same do not become nuisances in any respect." The city thereupon passed an ordinance providing a penalty for violations of the regulation thus adopted. One E. B. Holcomb was prosecuted for and convicted of a violation of this regulation, and appealed to the supreme court of the state, where the only question raised was, that the regulation of the board of health was void, because it amounted to an unreasonable restriction upon the rights of individuals. The agreed facts in the case showed that the city of Cedar Rapids had a population of 15,000, and the court says in its syllabus in the case: "A regulation adopted by the board of health, and enforced by an ordinance providing a penalty for its violation, prohibiting hog-pens, except for purposes of commerce, in a city of 15,000 inhabitants, cannot be said to be void for unreasonableness, even though it thereunder becomes a misdemeanor to keep in such city a clean and inoffensive pen with only one hog therein."—State *v.* Holcomb, 68 Iowa, 107. The court says in its opinion (and this is the vital question to those who are interested in upholding sanitary laws): "The board had the authority to establish such reasonable rules and regulations as in its opinion would preserve the health of the inhabitants of the city. The only question, therefore, is, whether the regulation is reasonable. It is said that while ordinances which unnecessarily restrain trade or operate oppressively upon individuals will not be sustained, yet such as are reasonably calculated to preserve the public health are valid, although they may abridge individual liberty and individual rights in respect to property."

Dillon on Municipal Corporations, sec. 320, and Commonwealth *v.* Patch, 97 Mass. 221, are cited in support of the decision, and part of the language of Judge Dillon is quoted. A singular typographical error appears in the report of this case, which I received through Dr. Shafer. In the statement of the facts, the court is made to say: "The defendant maintained in the corporate limits a pen in which was kept one hog, *and* for the purpose of commerce." With this statement of facts, the decision of the court was wholly unintelligible, but an examination of the official report of the case (68 Iowa, 107) shows that the language of the court was: "The defendant maintained in the corporate limits a pen in which was kept one hog, *not* for the purpose of commerce." This, of course, removed the difficulty. Had I more time I should like to go further into an examination of these questions, but what has already been said is sufficient, I think, to show that the legislature of every state of the Union has the right to enact such laws for the preservation of the public health as are not prohibited by the constitution of such state, or by the Constitution of the United States, and that when either a state or local board of health has been created by legislative authority and clothed with the power of adopting rules and regulations for the accomplishment of the objects for which it was created, it may adopt, and the courts will enforce, such rules and regulations as are reasonably calculated to preserve the public health, although such rules and regulations may abridge individual liberty and individual rights in respect to property.

CO-OPERATION BETWEEN BOARDS OF HEALTH AND THE TEMPORARY AUTHORITIES DEVELOPED BY SUDDEN LOCAL CRISES.

By A. J. MOXHAM, *of Johnstown, Pa.*,
Chairman of the "Citizens' Flood Committee."

The matter to which it is my purpose to briefly call your attention was suggested to me by the following extract from the annual report of the Secretary of the State Board of Health of Pennsylvania, Dr. Benjamin Lee, for the year 1889:

"Arriving at Morrellville, about a mile and a half below Johnstown, by the first morning train, General Hastings and Mr. A. J. Moxham, chairman of the local committee, were at once conferred with, and the headquarters of the board established in the same room with those of the committee, in order to avail ourselves of telegraphic, mail and messenger service, as well as to be in constant communication with the committee. The chairman of this committee,as well as Mr. J.B.Scott, of Pittsburgh, who, on the fifth day of June, having been elected by the representatives of the various boroughs as director, with absolute authority, assumed the reins of power, while naturally enough not recognizing fully the authority of the board, were very ready to avail themselves of its assistance in all matters of sanitary precaution and police. To the latter gentleman, especially, the secretary desires to make his acknowledgments for his constant readiness to co operate with him in all such measures, and his intelligent appreciation of the necessities of the situation from a sanitary standpoint."

To those who know the christian-like patience and unselfish devotion of Dr. Lee to the cause of the suffering at Johnstown, during the days of her trouble, there is conveyed a lesson in these words. To me, personally, they came with somewhat of a shock and the reproach that somehow I had (unconsciously perhaps) been false to my trust in the early days of our trouble, and not co-operating to the fullest extent possible with the doctor's early efforts. In those early days the difficulties encountered were such that mutual co-operation and help counted for more than on ordinary occasions.

To those who, like myself, know the difficulties and dangers of the situation of the first few days, the remarks suggest nothing short of ignorance in that such invaluable co operation as could be offered by the state board of health was not grasped with a willing hand, and looking back it has seemed to me that if in those days there was any lack of the appreciation of the authority of the state board it conveys a lesson, and one that we should profit by in cases of future trouble. That we were " very ready to avail ourselves of the assistance of the board in all matters of sanitary precaution and police" goes without saying. It was simply a case of necessity. We were ready to avail ourselves of anything that could help the problem; but that the authority of the board was not properly recognized simply means that we were not intelligent enough to avail ourselves of its help to the extent that we could have, had this authority been duly recognized.

Those who went through the Johnstown flood troubles from the beginning, realize that the difficulties of existence in the first few hours were infinitely greater than in the ensuing hours; that the problem of the first day was infinitely greater than that of the second day; and that the conditions of the second month can scarcely be compared to those of the first.

It was, so to speak, the problem of a patient jumping, not from convalescence to the full strength of health, but from the crisis of the disease, first to convalescence, and then to health.

In those early days, not merely had those of us who were able to think at all to look ahead and anticipate the wants that were to come, or the dangers that might be precipitated by carelessness or lack of thought, but this had to be done at the time when the necessities of the survivors, and the chaos into which everything was thrown, rendered it almost an impossibility to take care of the present, let alone to think of the step that was to come.

In the first organization of the citizens' committee we needed a location for each of the sub-committees. Some form of table was a necessity. The débris supplied us with an unlimited amount of lumber out of which a table could be made but it had not left us tools with which to make that table. Although within three squares of us, in the remnants of what had been a furniture warehouse, we knew these tables existed, it took us many hours to climb the débris and get the tables over those three squares.

Each table needed a sign to guide the throngs that pressed into headquarters, to the proper committee. Paint-brush and paint were something not to be had, nor in the early hours was ink available. We used a blacking-brush to paint the signs, and blacking was our paint, and in some of our early records blacking was the substitute for ink.

Some badge was necessary for the police force organized, and tomato cans furnished the material; and so through the list.

While we found difficulties in these little nothings, people, who thought they were going to starve, had to be reassured: drunkenness had to be controlled and stopped: robbery had to be put an end to; the recovery of dead bodies attended to, and preparation made for the digging of their graves. The distinction between what was easy and what was hard was swept away. There was nothing easy; everything was hard.

It was a case analogous to a surgeon having to suddenly care for a dangerous operation bereft of his instruments, his liniments, and still more, the assistance of his fellowmen.

I speak here of our first days. As stated, each succeeding day the conditions changed, as in the nature of things they had to change, with increased rapidity for the better. As a mathematician I would put it in the form of a formula, that our conditions of existence improved as the square, if not the cube, of the time elapsed. This being so, what but ignorance could have permitted on the part of the authorities any indifference to that help, which, of all help, was most valuable; or, of that experience, which of all experience, would guide us best. The authorities, from the first moment, were cognizant of the great danger to public health that existed. The state board of health (if my recollection is correct) reached us either Sunday evening or Monday morning. The day previous (Saturday) and all day Sunday large forces of men, that could be badly spared from other work, were engaged with teams that were taken away from the distribution of food, and ropes and tackles and other appliances that were in sore need for pulling away the débris to recover the dead, in pulling out dead animals to some point of safety and burning them. The first day over fifty-seven carcasses were thus destroyed; the second day a larger number; so that the authorities were certainly in that frame of mind which would appreciate the help to be given by the state board of health, and until I had read the extract quoted from Dr. Lee's report, I was under the impression that we not only availed ourselves of all that he could do for us, but that we did so with more than a grateful heart, and if there was any failure to appreciate the authority that was brought to us by his presence, it was because we did not know it. If we were in ignorance, others are apt to be so in similar cases, and it behooves us to seek some means to remove the possibility of its recurrence. How can this be done best?

From the nature of things all great catastrophes change the normal conditions of men. Anything, be it what it may, that interrupts, even for a very little, the continuance of the regular motion of the machinery of civilization, may produce incalculable disaster to humankind.

Speaking generally, it is not realized that were the productive current of everyday life to be held in check for even a few short hours, the evil results would take days, if not months, to remedy.

In the presence of such catastrophes man is governed less by his reason than by what may be termed instinct. While perhaps the usual form of organization may be gone through in the shape of appointing of committees for this, that and the other, the real truth of the matter is that the situation is inevitably controlled by one man power. Not only in the case of the chairman—say of the citizens' committee, which is generally evolved from such troubles—but also in the case of each sub-committee.

The emergencies become so rapid, and prompt action so necessary, that without stopping to discuss the problem as a matter of logic, the instinct of the mass prompts it to obey blindly every order issued by the parent committee; the parent committee by the same instinct obeys blindly, and without discussion, every order issued by its chairman. There is no time for discussion. And so with the sub-committees.

Indeed, if I had this problem to face again, I would urge the appointing of committees of one, and would not burden it by the farce of ordinary organization.

It may also be taken for granted that such a catastrophe as that of the class we are dealing with must first be grappled by the survivors on the ground and that therefore any state board of health reaching the scene of trouble will find something in the form of organization awaiting it.

I take it that these conditions may be assumed to be normal. Now, with these conditions, in what way in the future can our state board of health best secure that proper recognition of its authority which will render it most useful to the cause? It seems to me that there is a simple method, and one perhaps worthy of thought.

We all remember the moral conveyed in the old adage about changing horses while crossing the stream. A sudden and total change of organization would at least involve great loss of time, when, perhaps, every minute is pregnant with results.

This method is, that the first representative of the state board of health who has arrived on the scene should make a formal request that the board of health should find room in the existing organization as one of the committees. By this means the organization would drop into the groove of a recognized and absolute authority without a particle of disturbance of existing conditions, and without the loss of a moment's time. The conditions being that of one man power, the authority will be absolute.

Great as is the power of such boards of health in most cases, it is, in the face of such calamities as we are dealing with, a power on paper until incorporated into active work. By this means it becomes a power in fact, and it has at its command that co-operation of the one man, whoever he may be, that has been evolved as representing the authority of the people at such junctures. I take it that we cannot permit such considerations as the question of loss of dignity to influence our discussion of the matter, because we are dealing with a condition of affairs in which dignity as such is non-existent, and by the time that affairs improve to such an extent as to permit the entry of this consideration, in all probability the board of health will be master of the situation to the full extent of its real powers. I do not take it that there can be any clash of authority.

Believe me, gentlemen, that at such junctures a man feels very small. Let his courage be what it may; let his abilities be unlimited, he feels in the first grappling with such a problem very weak, and very helpless, and if there ever is a time when man becomes unselfish, and when petty jealousies are utterly swept away it is at such a time as this.

In my control of affairs at Johnstown I endeavored from the first to follow a consecutive plan. I find in my notes made at that time the following abstract of what demanded attention first.

First. Doctors.
Second Police.
Third. Food.
Fourth. Shelter.
Fifth. Burial of the dead.

Subsequent events added much to the list, but they were not in writing. Had I to write this list again, it would read as follows·

First. Brains.
Second. Doctors.
Third. Police.
Fourth. Food.
Fifth. Shelter.
Sixth. Burial of the dead.

In other words, the problem is greater than the mental power of any one man, and brain power is therefore that man's weakest point. Where can the brain power capable of dealing with such problems as these be more readily found than in an organization whose duty it is to deal with the problem of death, and what can be more certainly taken for granted than the usefulness of our state board of health will always find at headquarters a vacant place awaiting its arrival? It may appear that we are harping on a little thing, and so in ordinary conditions, perhaps, it may be called a little thing—the mere technicality of how one organization shall approach another but so far from being a little thing, does it seem to me, that I would even urge that in addition to the request for a direct representation in whatever organization exists, a telegraphic notice, if possible, should precede the arrival of the board's representative, and such notice should state clearly his authority and power.

Remember, that while you as a body know full weil what these powers are, and their efficacy, it is notoriously the fact that the public at large give themselves very little concern as to the peculiar nature of any of our state organizations, and that, in all probability, the very men who can co-operate best with the boards of health, are men who know very little of their scope or power.

Speaking for myself, I must confess that until circumstances forced me to look into it, I was in absolute ignorance of the facts.

EXPERIENCE IN SANITARY WORK.

By GEO. W. WAGONER, M. D., *Late Deputy Medical Inspector, Johnstown, Pa.*

The propositions which I shall attempt to present are based upon the sorrowful experiences following that deluge of horror and death in the Conemaugh valley, Pennsylvania. It may be possible that no such calamity may ever occur again in our generation, for this one presented all the combinations of wretchedness, misery, destruction and death that the wildest imagination could picture, and in it can be sought precedents for action in all future emergencies. With thousands of my fellow-citizens of Johnstown I have drained the cup of sorrow to its bitterest dregs. With them I have passed through the fearful ordeal and its horrors are buried deep into our memories. In a few short hours our peaceful valley was changed into a dismal hell, out of which came tales of agony that excited the sympathy and pity of the civilized world. The charitable of all nations furnished relief in every possible way, or, God knows, we should still be in that terrible ooze and slime, the most miserable of mankind.

The problem presented to our people and to those who hurried to our aid on the day following the destruction was an appalling one. A city blotted out of existence, and on its site a deposit of débris of amazing proportions and of a character most dangerous to health; the terrible fact that all over the valley were scattered the bodies of thousands of victims; the survivors who had been swept through the jaws of death and were now huddled together on the hillsides, heartbroken, impoverished and utterly hopeless of the future. Their only thought was of the dear ones who lay still in death somewhere in that awful filth. The civil officers did not assert themselves and assume the authority which all would have gladly obeyed. In the dreadful emergency a leader did appear in the person of A. J. Moxham, a clear-headed citizen whose dignity of character, energy, determination and scrupulous justness, inspired all with confidence in his ability to organize the terrified people. He called to his aid a few men of similar character who dared put aside their own griefs in the interest of the public. With heroic energy these men met the unparalleled emergencies of the first few days. They supplied food for the hungry, and protected the poor remnants of property from the hands of the brutal vandals. They encouraged the depressed people and commenced the herculean task of clearing away the wreck. With profound sympathy they sought out the dead and provided means for their decent burial. They evolved a system to bring order out of the horrible disorder, which was the germ of all the future successful plans. All this work was done upon the personal responsibility of Mr. Moxham, and when it was planned no one had reason to believe that the charity of the world could provide a fund to meet the heavy charges of such an undertaking. It is this fact which makes the actions of Mr. Moxham and his committee assume heroic proportions. It is needless to recite in detail the different steps by which the management of affairs passed into the hands of the state authorities. It is sufficient to know the latter soon appreciated the magnitude of the calamity and the extraordinary means required to counteract its baneful influences upon the public health. Dr. Benjamin Lee, secretary of the state board of health, hastened to the devastated regions and unhesitatingly declared the conditions prejudicial to health and public nuisances. This action opened the coffers of the state and provided the means for conducting the most extensive sanitary work of our age. At the sacrifice of his private interests, Dr. Lee devoted his entire energies to the management of this work, which will ever be the most noble monument of his ability as a scientific sanitarian. The power vested in him was used most judiciously; he exercised it with determination and energy, yet with such sympathy and discrimination that it proved the richest blessing our suffering people enjoyed. From the first moment when the officials of the state board of health arrived on the scene, the strictly sanitary work began. Men were sent out over the entire region with strong disinfectants and with directions to destroy by fire all dead animals. While this was being done a system was formulated by which the work could be continued with accuracy and all possible speed. The flooded region was divided into districts, each of which was placed in charge of a medical inspector, who was also supplied with men and material to do the work he found necessary in his district. By daily reports the central office was kept informed of all the work done from day to day and the condition of the people in each district. From these reports the executive officer directed the work and met emergencies as they arose.

As medical inspector of one of the districts, my experience has convinced me that one of the most important duties devolving upon a health officer in any such calamity is that of careful and repeated inspection of each particular house, its surroundings and occupants.

This duty was constantly kept in mind, and while all the other and varied work incident to sanitation was in operation, competent agents were traveling from house to house, outside the flooded district, in which the survivors were concentrated, inquiring into the health of the people; examining the cellars, outhouses and the methods of disposing of the kitchen slops; giving directions how, when and where to use disinfectants and making reports of everything coming under their view.

They examined the streets and alleys outside the flooded districts and reported when they were becoming filthy. Part of my force were thus employed in a large territory which had not been touched by the water, but in which was gathered all that had been saved from the ruins. This territory was kept in a good sanitary condition, and during the months through which the work continued not a single case of infectious disease developed. This gratifying result could only have been attained by making use of the knowledge gained by thorough inspection.

Another matter of extreme importance is the supply of disinfectants. The supply should be of such liberal proportions as to meet any possible requirements. To make their use general they should be furnished free of charge, and even then I found many people would neglect to use them, or use them in too small quantities. This difficulty was overcome by hauling the disinfectants along the streets, taking a supply into each house and in many places applying them directly where needed. To further accomplish this desirable end fifteen places were fixed in my district where the disinfectants could be procured by any resident who would take the trouble of walking a few steps for them. At each place there was a barrel of bromine solution, and a gang of laborers were kept going from one to another, filling the barrels and sprinkling the streets and alleys by means of the common sprinkling cans. In this connection I desire to bear testimony to the excellence of bromine as a disinfectant in all open places. A solution of proper strength can be handled safely and is certain in its action. It removes foul effluvia by destroying the germs of decomposition and does not mask a bad odor by substituting a worse. It was commonly remarked during our operations that everything smelled fresh and sweet after our gang of sprinklers passed along a street or alley. There were used in my district about 20,000 gallons of the solution of bromine during our operations.

Another important point was the cleaning of houses and cellars and the removal of débris. By a legitimate enlargement of the circle of sanitary endeavors, this class of work easily falls within it. The health of people can never be assured so long as they are living over a cellar which contains a flood deposit of mud, or when the house is surrounded by filthy débris. As a rule the people do not realize the danger of such surroundings, and it becomes the duty of the health officer to warn them, or, better still, to remove the deposits at the earliest opportunity. They are always rich in animal and vegetable particles, and under the proper conditions of heat and moisture afford all the essential elements of a breeding place of poisonous germs. This danger was recognized early by our board and every available means used to counteract it. The people were urged to throw the mud and filth out of their cellars, when the board would have the mass disinfected and removed to a place of safety. But many people were unable to do even this, when the board, as a matter of necessity, removed the deposits and disinfected the premises. The removal of the débris and deposits of mud and sand was done by contractors working under the supervision of the state authorities. Before any particular piece of work could be done for an individual, an application had to be filed with the state engineer in charge of the work; he would then direct one of his subordinates to examine the locality and report as to the necessity of it The application was then referred to the health office, and from there it was referred to the medical inspector, in whose district the premises were located. It was then the duty of the inspector to visit the locality and report to the health office its sanitary condition. The health office would then inform the state engineer of the inspector's decision and he in turn would direct the contractors in accordance with it. All this circumlocution may have been necessary and therefore desirable, but after all it was a circumlocution that kept many applicants in suspense for days and weeks, and resulted in gangs of laborers moving about over the town doing jobs here and there, while all around was work that could have been pushed straight forward. I was of opinion at the time and am still, that the supervision and direction of the medical inspectors was all that was needed or required. In theory the health office and its inspectors were the final authority that made the performance of any and all work done by the state, legal, and it did really appear that the work could have been done quicker and cheaper without the intervention of the numerous officials, their clerks and staffs, and all the other trivialities hung on for the sake of dignity and show.

It would certainly be proper for the state to have time-keepers and clerks to look after its interests, but there was no pressing necessity for a complete military establishment, whose business it was to secure authority from a few medical inspectors and then see that their orders were executed. The health office should have had direct and immediate control of all the contractors, and have been responsible to the state for the proper performance of its duty. It seems to me that this is one of the great lessons to be learned by the Conemaugh flood. That health officials should not only be expected to give opinions and advice about great public nuisances, but they should have the power to direct and control the means used to abate them, and thus be alone responsible for their advice and actions.

The disposal of the dead during times of great disaster is a question of immense importance. Our feelings of humanity and pity prompt us to make every effort to have the victims buried decently and in the ordinary manner. The controlling idea seems to be to get the bodies out of sight in the shortest time possible, and from a sanitary point of view it is a just and proper one. But while the public interests are being cared for in the disposition of the dead, the wishes and feelings of the surviving friends should also be respected, and every means furnished them for the identification of their dear ones. The management of the Conemaugh valley morgues was somewhat crude during the days immediately following the flood. It was the rule, from which there were few exceptions, that when a body was brought into the morgue no one was expected to examine it for the purpose of identification until all the clothing was cut off and cast away, the victims hair cropped close and flung into the garbage pile, all articles of jewelry removed, the body washed, laid out upon a board covered with a sheet, and numbered. Then the friends searching for their dead were allowed to wander among the bodies, straining their eyes to catch some familiar feature or mark which had not been obliterated by the morgue attendants. If one found a body which bore some fancied resemblance to a loved one and sought out the so-called description list, he was rewarded by finding the most meagre and trifling details, which served only to aggravate. When the work of removing the dead from the temporary burying grounds to Grand View cemetery was undertaken, and the people were again given an opportunity to examine the bodies and compare them with the morgue records, it was found that the bodies of many victims did not correspond in any particular with the description attached to what purported to be their number in the morgue books. In many cases the bodies and numbers were hopelessly mixed. When all the distressing circumstances surrounding the horrible tragedy are remembered, many mistakes can be excused but if there was any one duty, the perfect performance of which would have touched the hearts of the survivors, it was the one which made the identification of victims reasonably easy and certain.

I think it is safe to assert that if the clothing and hair had not been removed from the bodies, hundreds who are now occupying unknown graves would have been identified, to the intense relief of their sorrowing friends, and be laid away in spots ever hallowed by the tears of those whose only relief is to mourn in bitterness of spirit.

It is certainly true that when the bodies were brought into the morgues they were covered with mud, their clothing torn, and their bodies bruised and battered. But, notwithstanding these facts, it still remains equally true that the paramount duty of the authorities was to prepare the bodies so identification would be easy, and not to make presentable corpses of them.

God knows water was plenty with us then; the mud could have been washed off, and in the torn clothing and drabbled hair would have been found evidences of the identity of the body which never could be found in the distorted faces and mangled limbs of the victims. The experiences of a search for the bodies of nine of my immediate family justifies me in speaking with positiveness upon this subject. Even now, months after the calamity, the bodies which are unearthed are almost invariably identified, and entirely by means of the clothing.

These considerations make it evident that everything which might serve to identify a body should be left upon it, even if by so doing the corpse does not present the conventional appearance that most people deem so necessary.

Among the sanitary lessons taught by the great Conemaugh flood, I believe the following to be the ones of distinct value: Repeated and thorough inspection of a district, and the application of the knowledge thus gained; persistent disinfection; the speedy removal of all filthy deposits; the concentration of power and responsibility in the hands of the health officer, and the abolishment of all cumbrous extra-official authority; and, finally, the preservation and burial of the dead in the condition they are found, as nearly as a proper regard for decency will allow, always bearing in mind, however, that identification of the dead is one of the chief objects to be aimed at.

THE FLOODS AS THEY AFFECT THE PEOPLE OF SOUTH CAROLINA.

By W. D. CLINTON, M. D., *of Lancaster, S. C.*

The idea has suggested itself to my mind that perhaps, as a general thing, from pride in our association, and in the desire to present something worthy of it, we are too apt to think that our papers should embody something original, or should reach the dignity of elaborate essays. But since entering the study and practice of medicine, I find there is not much of original thought for one to produce, for we are studying and combating with the same diseases that our fathers had to fight against. Now, since there are men here to present the sanitary condition of the three states, and men who were successful practitioners before I knew there was such a thing as medicine in the world, or before I came into the world, I feel highly honored and grateful to God and man that I should be appointed by our worthy secretary to have something to say. In accordance with these views I desire to cast in my mite by having a few words to say concerning the floods as they affect the people of South Carolina. Having been born on the soil, drank of her water, and breathed her healthy and unhealthy air, it is with much pleasure that I speak of her. South Carolina, as you are doubtless aware, is in the alluvial belt of the United States, which has not the natural surroundings that you have here. No lofty peaks of mountains are to be seen which give power to the rivers as you have here; but there is a flat plane, which is quite often covered by water and débris, which are brought there from other parts of the state. In this we find a great deal of animal and vegetable matter which finds its way into the wells, springs, and reservoirs of the state. Then it is that the germ of disease begins its work and especially the one which is called bacillus malari. It is this disease which rises in the garb of its kingly power and sways its sceptre over the state, rebellious to the power of all the antipyretics. Thus it works its way and has its sway until summer, with her hot days, and sultry nights, compels it to seek a refuge in the swamps which are covered by water. There this bacillus remains dormant until the fall season brings back reinforcement for the poisonous germ which has made its home in the swamps, wells and springs, then it is that it bursts forth in the power of its might and shakes the very foundation of the medical skill. Though this bacillus is severe, yet there is one thing in its character to be admired and that is this: it has no respect for persons; it goes into the rich man's house though surrounded with all of the luxuries of South Carolina, and having everything to make him happy, yet this germ comes upon him and gives him the same kind of a shake as it does the herdsman who attends to his goats, or the beggar who wanders in search of his bread. Even the Governor in his place is shaken by the same malady. Hence, we find it in one phase a noble disease. Nor less so is the dreadful disease of typhoid fever, which is ushered in upon the people living in the districts which are flooded by the Catawba, Lynces, Congaree, Wateree, Ashly and Cooper rivers. This germ finds its way through the floods of said rivers into the springs, wells and reservoirs. It is thought there that it is found in the vegetable as well as in the animal kingdom. The working of this germ or bacillus, as Dr. Klebs calls it, is different from the one in malaria. It seems to flourish most in hot weather and dry autumn. This disease enjoys good weather when it spreads its wings and feasts on the bodies of the people of South Carolina. Though it seems to think more of the rich and the intelligent than the poor; it is the poor people who are the victims of this malady. In all ages and in all parts of the state, since I have had the chance to read of the course, effect and cause of the disease there have been able, scholarly and refined physicians striving to find a remedy to kill the germ. It floated in the hearts and minds of the medical fraternity of the state. They have depicted in ever-glowing colors the rise and progress of this disease and the incentive, which has given a better understanding to their labors in combating this dreadful disease. And now they are diving into the Klebian doctrine and striving for the saving of mankind. Though the flood has brought the disease upon the people and in it the germ is sown, yet by a united effort of the medical profession they keep it abated, and in some cases they drive it from their patients, though leaving them emaciated and weak, yet they rally and get back to their former powers. This disease seems to have a great desire for the colored man and poor white man of South Carolina. Since they work in the lowlands, on the rice and cotton farms, they seem to be more subject to the disease than those who are seldom seen in the lowlands. These are not all of the diseases which we find affecting the people of South Carolina through the influence of the floods. Acute dysentery is found, in the most flooded parts of the state, to be more severe just after a flood. It is one of the dreaded epidemics of the state. The cause or germ has not been discovered yet, but from observation we find it at its highest pitch just after a flood. It was observed by the profession during the year 1876, there were very few floods and no cases, comparatively, of dysentery; but in the year 1884, when the rivers spread and watered the country for miles, it was then seen that dysentery created much havoc in the state. Most all of the farmers suffered from the attacking arm of dysentery—not only man, but the cattle, were affected by the water. Now the medical society of the state is searching for a remedy to combat successfully the different diseases as they arise from flooded districts. They are striving to uproot the firm foundation of the different diseases caused by the flood in that state and hunting remedies to kill all of the germs which may arise to baffle the skill and judgment of the young practitioner.

They are laying a firm foundation, worthy to be emulated by those who are to take up the mantle of the profession as they yield to the power of time. It is a great pleasure to me to see the old physician standing on the wall and calling to the young man to come up here. We know they did not, neither could they prevent the flood; but they did successfully combat the effect which the flood produced. Now they can look back over a well-spent life, and read to their delight the record of the past.

There is no set time in South Carolina for the districts to be partly covered by water, for any hard rain will cause the rivers to overflow. In some parts of the state all of the débris, including animal and vegetable matter, are burned with the idea of killing the germs; but they are like the ghost that will not be downed.

Having been greatly benefited by this association, I thank you for the honor conferred upon me.

4—PROCEEDINGS OF THE FOURTH STATE SANITARY CONVENTION OF PENNSYLVANIA.

HELD AT NORRISTOWN, *May* 9 *and* 10, 1890.

Officers.
Programme.
Minutes.
Papers read:
- **The Necessity for Sanitary Organization of the State under Legislative Sanction, by H. K. Weand, Esq.**
- **The Sanitation of Rural Homes, by S. Wolfe, M. D.**
- **The Use of Salicylic Acid as a Preservative, by H. Leffmann, M. D.**
- **The Disposal of Garbage in Norristown, by J. K. Weaver, M. D.**
- **The Funeral Director as a Sanitarian, by R. R. Bringhurst.**
- **Drainage and Sewerage of Norristown, by P. Y. Eisenberg, M. D.**
- **Annual Address, by Prof. A. Arnold Clark, A. M.**
- **The Dangers Arising from Public Funerals in the Case of Contagious Diseases, by Rev. S. Bridenbaugh.**
- **Sanitary Defects in Manufacturing Establishments, by H. A. Arnold, M. D.**
- **The Purification of Water Supplies by C. W. Chancellor, M. D**
- **Thoughts on School Hygiene, by George G. Groff, M. D.**
- **Mental Hygiene of our Boys and Girls, by Robert H. Chase, M. D.**
- **Defective Vision in our Public Schools, by S. D. Risley, M. D.**
- **The Relation of the Church to Sanitation, by Rev. Thomas R. Beeber.**
- **The Harmonious Development of the Physical with the Mental Powers, C. E. Ehinger, M. D.**
- **On the Necessity for the Early Diagnosis of Communicable Diseases and their Immediate Report to the Health Authorities, by Pemberton Dudley, M. D.**
- **The Communicability of Consumption, by Benjamin Lee, M. D.**

OFFICERS OF THE CONVENTION.

President—Hon. Henry K. Boyer, State Treasurer.

Vice Presidents—Hon. Thomas J. Stewart, Secretary of Internal Affairs, Col. Louis W. Read, M. D., Surgeon General N. G. P., Hon. A. S. Swartz, President Judge, Hon. H. K. Weand, Additional Law Judge, Hon. Charles Hunsicker, Rev. Isaac Gibson, Rev. Charles A. Fulton, Rev. Thomas B. Beeber, Hiram Corson, M. D., Hon. H. R. Brown, Hon. Austin L. Taggart, Hon. I. Newton Evans, Hon. Alan Wood, Mr. Charles Heber Clark, Mr. S. Powell Childs, Mr. Samuel K. Anders, J. K. Reid, M. D., Hon. Charles Moore, Mr. Morgan R. Wills, Mr. William Reunyson, Mr. Benjamin E. Chain, Mr. Albrecht Kneule, Mr. S. B. Helffenstein, Mr. William Stahler.

Secretary—William B. Atkinson, A. M., M. D., *Honorary Professor of sanitary science, Medico Chirurgical College, Phila.*

Assistant Secretary—H. H. Whitcomb, M. D.

Committee of the State Board of Health.—Dr. Joseph F. Edwards, Dr. Benjamin Lee and Dr. Pemberton Dudley.

Committee of the Norristown Board of Health.—Dr. P. Y. Eisenberg, chairman; Dr. Joseph K. Weaver and Mr. Samuel E. Nyce.

Reception Committee.—Mr. George Dallas Bolton, Chairman; John W. Bickel, Esq., Hon. Theodore W. Bean, Hon. C. Tyson Kratz and Mr. Henry W. Kratz.

PROGRAMME.

First Session—Friday, May 9, at 10.30 a. m.

GENERAL SANITATION.

1. Convention called to order by the president.

2. Prayer by the Rev. J. Lincoln Litch, pastor Central Presbyterian church, Norristown.

3. Music—*Herdsman March* (Bowman), by the orchestra of the Pennsylvania State Hospital for the Insane, Norristown.

4. Address of welcome by Mr. Isaac Chism, member of the borough council of Norristown.

5. Response to the address of welcome, by Hon. Samuel T. Davis, M. D., member of the State Board of Health of Pennsylvania, Lancaster.

6. Opening remarks by the president of the convention.

7. The "Christian Sanitarian," by Joseph F. Edwards, M. D., member of the State Board of Health of Pennsylvania, Philadelphia.

8. "Necessity for Sanitary Organization of the State under Legislative Enactment," by Hon. H. K. Weand, additional law judge, Norristown.

9. Discussion, led by Hon. Aaron S. Swartz, president judge, Norristown, and George W. Rogers, Esq., Norristown, and Hon. Robert Adams, minister to Brazil.

10. "The Abuse of Salicylic Acid as a Food Preservative," by Prof. Henry Leffmann, M. D., food analyst of the State Board of Agriculture, Philadelphia.

11. "The Purification of Drinking Water. "by C. W. Chancellor, M. D., secretary of the State Board of Health of Maryland.

12. Music—*Clarinda Polka*, (F. J. Keller).

Second Session—Friday, May 9, at 2.30 p. m.

LOCAL SANITATION.

1. Music—*Immergrun Galop* (C. A. Carl).

2. "Sanitary Lessons of the Johnstown Flood," by Gen. Daniel H. Hastings, Adjutant General, N. G. P., Bellefonte.

3. Discussion, led by Prof. George G. Groff, M. D., president *pro*

tem. State Board of Health of Pennsylvania, Bucknell University, Lewisburg, Pa.

4. "Garbage and Its Disposal in Norristown," by J. K. Weaver, A. M., M. D., chairman committee on sanitation of the board of health of Norristown.

5. "The Sewerage and Drainage of Norristown," by P. Y. Eisenberg, M. D., member of board of health of Norristown.

6. Discussion, led by Mr. A. Arnold Clark, of Lansing, Michigan, and Gen. D. H. Hastings.

7. Music—*Era Waltz* (Zikoff).

8. "The Sanitation of Rural Homes, by Samuel Wolfe, M. D., lecturer on physiology, Medico-Chirurgical College, Phila., Skippack, Pa.

9. "Sanitary Defects in Manufacturing Establishments," by H. A. Arnold, M. D., late president Montgomery County Medical Society, Ardmore, Pa.

10. "The Dangers of Public Funerals in Contagious Diseases," by Rev. S. Bridenbaugh, pastor Reformed Church of Ascension, Norristown.

11. Discussion, led by the Rev. Charles A. Fulton, pastor First Baptist church, Norristown, and Rev. J. Lincoln Litch, pastor of the Central Presbyterian church, Norristown.

12. Music—*Village Maiden Polka* (Bowman).

Third Session—Friday, May 9, *at* 8 *p. m.*

1. Music—*Medley* (L. O. DeWitt).

2. Annual address before the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, by Mr. A. Arnold Clark, lecturer on hygiene, Lansing, Michigan.

3. Music—*Mountain Side Galop* (Bowman.)

4."The Relation of the Church to Sanitation," by Rev Thomas R. Beeber, pastor First Presbyterian church of Norristown.

5. Discussion, led by Rev Isaac Gibson, pastor St. John's P. E. church, Norristown, and Rev. J. B. Henry, pastor Trinity Reformed church, Norristown.

6. Music—*March, Welcome* (C. A. Carl)

Fourth Session—Saturday, May 10, *at* 10 A. M.

HYGIENE OF SCHOOLS AND SCHOOL CHILDREN.

1. Music—*Fishermaiden Waltz,* (L. Waldman).

2. "Thoughts on School Hygiene," by Prof. George G. Groff, M. D., Lewisburg.

3. "The Mental Hygiene of Our Boys and Girls," by Robert H.

Chase, A. M., M. D., superintendent State Hospital for the Insane, Norristown.

4. "The Harmonious Development of the Physical with the Mental Powers," by C. E. Ehinger, M. D., professor of physical culture in the State Normal School at West Chester, Pa.

5. Discussion, led by Dr. J. H. McClelland, member of State Board of Health of Pennsylvania, Pittsburgh; A. H. P. Leuf, M. D., professor of physical culture in the University of Pennsylvania, Philadelphia; and Prof. George M. Phillips, Ph. D., principal of the state normal School at West Chester.

6. "Defective Vision in our Public Schools," by S. D. Risley, M. D., ophthalmic surgeon and chief of clinic, University of Pennsylvania, Philadelphia.

7. "The Necessity for the Early Diagnosis of Communicable Diseases and their Immediate Report to the Health Authorities," by Pemberton Dudley, M. D., member of the State Board of Health of Pennsylvania, and professor of physiology and sanitary science in the Hahnemann Medical College of Philadelphia.

8. "The Communicability of Consumption," by Dr. Benjamin Lee, A. M., M. D., secretary of the State Board of Health of Pennsylvania, Philadelphia.

9. Music—*Polka, Greenwood* (Bowman).

Fifth Session—Saturday, May 10, *at* 2.30 *p. m.*

TO BE HELD IN THE THEATRE OF THE STATE HOSPITAL FOR THE INSANE.

1. Music—*Happy Moments* (A. Dell).

2. "The Drainage of Large Institutions, "by Mr. George E. Bell, civil and sanitary engineer, Philadelphia.

3. Miscellaneous business.

4. Adjournment.

5. Music—*Galop, Janette* (Bowman).

MINUTES.

The convention was called to order by the president at 10.40 a. m. Hon Thos. J. Stewart, Secretary of Internal Affairs, apologized for the Hon. Henry K. Boyer being absent, owing to the illness of his father.

Rev. J. L. Litch, pastor of the Central Presbyterian church, Norristown, opened the session with prayer.

Mr. Isaac Chism, member of the borough council, made an address of welcome. He regarded the appearance of so many learned sanitarians in Norristown as neither strange nor extraordinary, inasmuch as that at some period all great men come to Norristown. He made a touching allusion to the deceased men of prominence of Montgomery, Scott, Hartranft and others. The objects of the organization were of importance, the removal of unhealthy surroundings, the work was a noble one—a benefit to future generations. On behalf of his fellow citizens he offered those present a cordial welcome to Norristown.

Dr. Samuel T. Davis, of Lancaster, member of the board of health replied, as follows:

MR. PRESIDENT, LADIES AND GENTLEMEN: It has fallen to my lot to respond, on the part of the state board of health, to your kind invitation to hold the annual state sanitary convention in your beautiful town. We not only feel gratified for the invitation, but commend your local board for the manifest interest which prompted them to extend it.

Now that we are here, your words of welcome and encouragement place us under still greater obligations, and cheer us on in our earnest endeavors to ferret out from all the abnormal conditions of air, water and food, the causes of their contamination, and consequent common carrying of disease and death to our fellow citizens.

The prevention of disease from clearly defined specific causes is a subject worthy the investigation of a lifetime, and a moral and political duty which man owes to his fellowman. To those who cure diseased conditions we would vote a crown of earthly glory and sufficient of this world's goods to enable him or her to enjoy all of this world's enjoyments. To those who prevent disease, we grant everlasting honor and peace as benefactors of the race of man, and entitled to all the honors of the former, and in addition the reward of Divine preferment beyond this short struggle with things temporal.

Born June 3d, 1885, your board of health of the State of Pennsylvania is as yet but a small boy in kilts, but it has gotten into line, made its mark, and its influence has been felt throughout the length and breadth of this great commonwealth. Our circulars, containing sanitary instructions and wholesome advice to the people, find their way to every hamlet in the state, and are sought for by sanitarians in every state in the Union.

A limited and barely sufficient appropriation for current expenses and the want of proper legislative enactments for the enforcement of sanitation in the rural districts have, to a great extent, retarded the work of the board: but on the other hand, the efficiency of the secretary, whose ability as a sanitarian is second to none in the country, has, as far as it was possible, made up in part for the lack of state aid.

In the cities of Philadelphia, Pittsburgh, Allegheny, Erie, and the larger population centers, self-preservation has long since necessitated the establishment of well-organized and efficient health departments. But I am sorry to say, in the rural districts and small towns of the commonwealth the prevention of disease in man and domestic animals is sadly neglected, and they are responsible for results of the most disastrous character. The necessity for small town and township boards of health is as urgent as that the rootlets of the growing tree should have nourishment.

A well-organized board of health, with proper authority, willingness to exercise it, and always on the alert, would have prevented over one thousand persons from being affected with typhoid fever, and saved over one hundred lives and thousands of dollars to the plague-stricken inhabitants of Plymouth, Pennsylvania. The history of that memorable epidemic, and the possibility of its prevention beyond the shadow of a doubt, are no longer debatable subjects.

Without well-organized intelligent local boards of health over the whole state, the same calamity is liable to occur just as often as the necessary circumstances and conditions are brought together. As true as that water seeks its level; that certain substances always crystallize in the same form; that nature's laws are inevitable, so surely will the germs of contagion cause disease. While I am not an alchemist, nor in search of the philosopher's stone or the fountain of eternal youth, the fact that the microscope has, within the last few years, developed so much of the heretofore unknown, I am inclined to think sometimes that all diseases are preventable, and that the only disorder which the human form divine should be afflicted with is old age, and a useful physical condition should continue for more than three score years and ten. Who can tell, or even imagine, what the result of another century of scientific investigation as to the cause and prevention of disease will develop? Many years ago Dr. Franklin caught from the clouds and bottled the electric spark, and won the applause of the scientific world. The latent force remained in its lethargic condition until but a few years ago. May we not, in our daily walks of life, be stumbling over small and apparently worthless or insignificant substances, which will some day, when properly applied, counteract the spread of disease in man and beast? Three scientists of Paris but lately assert that essence of cinnamon, when sprinkled in the room of a typhoid fever patient, kills bacteria within twelve hours and prevents the disease from spreading. Whether this be true or otherwise, time will prove, and if the discovery is freighted with the same good results as vaccination in the prevention of that loathsome disease, small-pox, the civilized educated part of the world will rise and call Drs. Chamberland, Mermier and Cadiac blessed benefactors.

The objects of holding sanitary conventions throughout the state are manifold, and suggest themselves to any one interested without the formality of an introduction. The special object of this convention is to awaken an interest in the minds of the citizens of Norristown in such matters as pertain to the public health and prevention of disease in the borough, the discussion of local measures of reform needed as regards drainage and sewerage, the disposal of garbage, the registration of births and deaths, and last, though not least, the condition of the water supply.

When Isaac Norris purchased from William Penn the site upon which this ancient town stands its sanitary condition was, no doubt, first class. The sparkling waters of the picturesque Schuylkill were pure, healthful and undefiled, and the air, laden with ozone and perfumed with the odors of the virgin forests, sweet and invigorating. The tide of civilization reached Swede's Ford, and in 1128, the borough of Norristown was incorporated. From the little hamlet on the north bank of the river, blast furnaces, rolling mills, woolen and cotton mills, a glass factory and oil refinery have sprung up, and with them a population nearing 20,000 souls. The forests along the stream have given way to the husbandman's axe, and the soil in which they grew to the plow, and where once rustled the leaves of the majestic oak now waves the growing grain. Towns, cities, farmhouses and factories nestle on both its banks and tributaries, and the once pure and healthful water of the Schuylkill has become a common sewer on its way to the ocean. It may be true, as some one who had more faith than facts has said, that impure water becomes pure when it has run over three rocks, but sanitarians now a days don't believe it. One instance alone will refute the silly assertion. The village of Laussane, near Basle, Switzerland, is situated at the foot of a mountain out of which flows a beautiful spring, and from which the inhabitants, save six families, were supplied with water. On the opposite side of the mountain was an isolated farmhouse, near a small brook. In this house was an imported case of typhoid fever. The brook received the dejections and the linen was washed in it. After the water had been thus polluted it was used for irrigating some of the meadow land close by, and the effluent water filtered through the intervening mountain to the spring in the village, and every inhabitant, except those in the six families, who used the water from private wells, was stricken down with typhoid fever. The passage of water from the irrigated meadows to the spring at Laussane was proven by dissolving in it at the meadows eighteen hundred weight of common salt, and then observing the rapid increase of chlorine in the spring water. But the most important and interesting experiment consisted in mixing uniformly with the water fifty hundred weight of flour, not a trace of which made its way to the spring, thus showing conclusively that the water was filtered through the intervening earth and did not pass by an underground channel.

Two years ago, when the state sanitary convention was held at Lewisburg, my better half, after considerable persuasion, accompanied me. At that interesting session, Dr. Edwards, during a lecture on home sanitation, exhibited, by the aid of a stereoscope, a number of photographic views thrown upon a screen, entitled the "Mistakes of the Plumber"—the architect, the fouling wells, animalculæ and other inhabitants of the microscopic landscape. The good lady became so much interested in the whole subject that she can scarcely wait for the monthly visits of the *Annals of Hygine.* The water in the old well, which had quenched the thirst of thousands for half a century, was looked upon with increased suspicion, and to-day it is used only for washing cuspidors and the surface drain.

Soon the cistern had to be remodeled, and since its completion its pure, sparkling water, filtered through eight inches of hard-burnt bricks and six inches of charcoal, is used entirely for drinking and culinary purposes. Several additional traps in waste pipes were also necessary, as well as some changes in ventilation. The home is the unit of sanitary reform, and successful sanitation must begin there. The prevention of disease is one of the subjects of which the school of experience teaches much, and aided by sad illustrations, but to which the pupils pay but little heed. Our good housewives, the queens of our homes, are in the most favorable position to first discover when anything is wrong, and while they may be active and useful members of missionary societies, temperance organizations, ladies' aid associations, and blessed with health, education and intelligence, if they are not familiar with the action of foul gases, contagious poisons and the causes of disease, both sickness and death, which might be averted, may steal upon them through an almost imperceptible crevice in the wall.

Much has been said and written upon the the subject of home hygiene, but the importance of interesting the ladies particularly in the great work has been neglected or overlooked. Our home rules, for what and how to do when the dread monster diphtheria or scarlet fever has fastened its talons on one of the little flock of home lambs, should be studied, understood and cherished by every lady who is or ever expects to be a mother. What a grand field for woman's work! Thousands of dollars are collected yearly by penny and nickel contributions in Pennsylvania, and find their way to foreign lands to be used in the enlightenment of the heathen. I say "amen," but self-preservation should be the first law of nature. Our duty should be to look first to our vital interests at home, and as long as there is a leaking sewer or a pile of decayed vegetables in the back yard or cellar, see that it is attened to first.

Before closing these remarks I earnestly take the liberty of making a suggestion to the ladies of Montgomery county, and sincerely trust my words may not fall unheeded; that is, to ask you to form a Montgomery county ladies' sanitary society. Hold regular monthly meetings. The Norristown board of health will hail your new departure with delight and render you all the assistance in their power. Request Dr. Alice Bennett, president of the Montgomery county medical society, to help you to organize and give you a plain talk occasionally. Ask Dr. Lee, secretary of the state board of health, for literature, and I guarantee it will be forthcoming.

Open up the subject of the prevention of disease, and the prolongation of human life, and follow it from the cradle to the grave; and don't stop there, for the dead are often the greatest enemies of the living. Send representatives to our sanitary conventions and we will be proud to receive your delegates.

THE NECESSITY FOR SANITARY ORGANIZATION OF THE STATE UNDER LEGISLATIVE SANCTION.

By Hon. H. K. WEAND, *of Norristown, Pa.*

The increasing interest shown in all matters relating to the public health, and the adoption of sanitary laws, and the beneficial results arising from investigation into the hidden causes of diseases and the best means of preventing them, is a subject for congratulation not only by the medical profession and sanitarians, but by all who believe that, to a certain extent, contagious diseases at least can be met and fought in a practical manner in our every-day life.

When the subject of our health thus becomes a practical one, and when it can be brought home to the knowledge of thinking men that by studying the cause and origin of disease it will be found that much of it can be prevented by simple rules, and that we ourselves, by ignorance or indifference, are indirectly, if not directly, the cause of much suffering and distress, which could be easily avoided, and thus add to our daily comfort and prolong our lives, the matter will appeal to us as one of such general importance as to deserve for it the same consideration which we give to the protection of our persons and property.

If we can by the study of disease, the elements which cause it, how and where it is propagated and how best it can be defeated, become insurers of our health, the plainest dictates of common sense and humanity require us to adopt such methods as will procure these results.

I feel safe in assuming that this body, at least, recognizes the necessity and advantage of some general system of sanitary regulation throughout the state, which shall at the same time be the most practical, thorough and effective in its purpose to ascertain the cause of and to prevent, as well as to arrest, disease arising from any source which may create it, either by polluting the air or water; by insufficient drainage; the maintenance of cesspools or the disposal of garbage, and which shall, by the proper enforcement of laws adapted for the purpose, preserve the public health from these and other agencies.

and also to disseminate useful and practical knowledge upon this all-important subject.

That combined effort in this regard is more likely to accomplish the end desired than individual action is self-evident, but the question still remains, ought it to be done by legislative sanction, as a measure in which the state is or can be interested?

I therefore propose to treat the subject with reference to the duty of the commonwealth in relation to health laws, and the advantage and necessity of general sanitary regulations capable of enforcement.

The paramount object of all organization is to protect and benefit those who enter into it. To most effectually accomplish this purpose, power must be lodged in some person or body to enforce obedience, and to counsel and advise by proper rules and laws, else if each is allowed to act upon his individual opinion the object of the organization fails. For where all are left to do as they please, there are none to be governed, and hence no necessity for government.

The primary object of state government is, therefore, the protection of the people in their lives and property, so that each may pursue that course which is best conducive to the enjoyment and defending life and liberty; of acquiring, possessing and protecting property and reputation, and of pursuing their own happiness. In the pursuit of these objects there must necessarily be some rule of conduct laid down by the superior power, to which all must yield obedience. To state that every individual in the community ought freely and voluntarily to do that which will produce these results is but to recognize the dictates of reason. Self-preservation is the first law of nature, and men will return blow for blow in defense of their persons; shoot the midnight thief to protect their property, although this may be replaced or restored. How much more, therefore, ought they to endeavor to prevent the loss of health, which when once lost may never be restored or regained, and which in every condition of the social scale is more important than mere worldly wealth. But even though the individual should, after being robbed, condone the offence or consent to injuries which may render him unable to pursue his ordinary occupation, or may so far forget his duty to himself, his family or society, as to attempt his own destruction, the state will not consent that these acts shall go unpunished. At common law to attempt suicide is a crime: to render oneself habitually drunk is punishable, and so of many acts committed by individuals in a manner only directly affecting themselves, yet indirectly affecting the community by impairing their usefulness. All this proceeds upon the theory that in an organized political body, such as a state, city, or other municipality, each individual in return for the protection afforded, owes a duty to the whole community, and that the power to enforce this duty must be lodged in the organization as an entire body.

Manifestly, it is to the interest of the state that its citizens should be honest, that each may enjoy his own; that they should be intelligent, diligent and frugal, for this produces prosperity; that they should be temperate and moral, for this prevents crime; and that they should be healthy, for without this the other good results are less likely to follow or may be of no benefit. People of intelligence recognize the fact that sickness means pain and distress leading to premature death; that health means pleasure and contentment or the means of acquiring it, and prolonged life through natural causes. Besides our natural instincts teach us that cleanliness is more desirable than filth; and what is fair and pleasing to the eye and taste is more desirable than the reverse. But as unfortunately all do not think alike or agree as to what constitutes cleanliness or what is proper in a given case, and as there always have been and always will be those who set themselves in opposition to all laws human and divine, natural or political, who imagine that the only true rule of life and government is that every one should so live as to violate no written and positive law, and who only obey these from fear of the punishment following the violation, it becomes absolutely necessary for the state, as a guardian of the public interests, to interfere for the general good. For while many will eagerly resent an attempt of an individual or set of individuals to correct an abuse or to reform an evil, they will consent to such action when it appears to be sanctioned by positive law; and if not willing to yield obedience, they must be forced to do so. In our every-day life we constantly do that which our conscience may question, but which we sanction merely because it is the law. To say to a man, "You ought not to do so, because the act is morally wrong," provokes the reply, "Who made you the judge?" But to say to him, "The law forbids it," generally disarms him and insures obedience.

If, therefore, as an eminent prime minister of England once said, "The health of the people is the first duty of the statesman, "it would appear that the legislature of our state could have no more important subject brought to their attention than that which relates to the protection of the public health, and if this can be better accomplished by a general sanitary system under the protection of the law, and having for its main purpose the enforcement of rules and regulations which will tend to prevent disease, remove and abate nuisances which affect the health, and by the collection of vital statistics enable us to study and comprehend more effectually the origin and nature of our every day ailments, they will simply be doing that which in this age of advancement and progress becomes a duty and its neglect a crime.

That the members of the state board of health recognize the necessity for some general and systematic action must be apparent; for to them now, with their limited organization, powers and means, is entrusted the subject of all those matters involving the causes of disease, with the duty resting upon them to disseminate information upon the subject which shall be best calculated to prepare us for such action as will make the appearance of contagious diseases, especially, less likely to happen, as well as to instruct us how we shall in every-day life so act as to protect our health.

To the credit of the medical profession it may be said that much of the indifference shown with reference to the enforcement of sanitary laws arises from the faith which we have in their power to do the proper thing at the proper time, and hence the general indifference on the part of laymen. As a result, nearly every effort looking to good results in these matters comes from the medical profession; and yet, with all their efforts, the result is not entirely satisfactory.

It is reasonable to assume that much of this indifference arises from our ignorance, and not because we do not value or truly estimate the benefits shown to follow. Until danger appears, few think of it. We are apt to speak of cranks and theorists, and to the average mind to guard now against an epidemic not immediately apparent is a waste of time; and to pass laws even against ordinary nuisances is regarded as nothing more than an attempt to be better than your neighbor.

Thus, indifference leads to delay and neglect, until contagious disease appears; and then in our frantic efforts to ward off its effects and arrest its spread, we blame the doctors and the law, without reflecting that we ourselves are responsible for the result.

As in all movements of the kind, the first thing to do is to interest every intelligent thinking man, woman and child in the subject by teaching the danger of non-attention to health laws; to show how disease is created and how to avoid it; and by pointing out the danger resulting from a violation of those sanitary laws which modern science and learning have demonstrated to be the sure cause of contagious diseases, arouse public sentiment by an appeal to reason.

When a community becomes thus alive to the importance of the subject, it will be found that public sentiment will induce that which otherwise it might be difficult to accomplish.

For when a community is taught that acts manifestly for their own good and advantage are prompted not by selfish, arbitrary, vain or personal motives, they make the cause their own and unite in enforcing obedience. But if good is thus to be accomplished it ought to be systematic, general and uniform, and not confined to a few localities; for whilst in a certain sense this would be a gain to the localities immediately affected, it does not meet the trouble.

Contagious diseases cannot be arrested in their progress by geographical lines, and a community in which the strictest rules of health are enforced is still liable to be affected by a communicable disease brought to it from other places.

If, therefore, the individual owes it as a duty to the state to give it his best efforts, and if such efforts can best be obtained by healthy bodies, so far as individuals can ordinarily produce such results; if his duty to himself, his family and his neighbors require him to be an active worker for his, their and the general good, he should be in favor of such measures as will best produce that result.

On the other hand, if the state as the guardian of the citizen owes him the duty of education and protection in health as well as in life and property, the necessity for some general system regulating the observance and enforcement of health laws must be apparent.

If it is wise to enact a law prohibiting the sale of unwholesome food, because of the evil effects likely to follow, why not equally wise to forbid the pollution of water, or rendering the air which we breathe impure, if they also affect the health? These remarks, of course can, only apply to those acts which naturally and inevitably tend to create disease, and which, from their public character, are likely to seriously affect the community, and which are based upon hygienic laws, which experience has shown cannot be violated without producing evil results.

This subject has already received the attention of many of the states, including Pennsylvania; but it has only been done in such a qualified manner as not to meet the requirements of the subject, and further legislation would be justified if for no other reason than as an educational measure. If to be forewarned is to be forearmed then to be forearmed is half the battle. The good which results from knowing what to do in a given emergency and how to do it well, especially in case of sickness, cannot be overestimated.

Thus, local organizations, by acquiring a knowledge of the laws of health, especially with reference to those diseases contagious in their nature, the treatment of epidemic and other diseases, the proper application of sanitary principles to practical life, and then being able to act intelligently and advise others how to do so in matters requiring speedy action on questions of public health, must be of inestimable benefit to a community. We all know how we dread the approach of contagious diseases, how easily a community is alarmed and almost thrown into a panic by the sudden appearance of cholera, small-pox or kindred diseases in our midst, and what a feeling of comfort follows when we know that there are those at hand who, by previous study and preparation, with authority to act and with knowledge what to do, and a willingness and desire to afford relief. In many cases speedy and judicious action has saved a community a loss of life and property which otherwise might have been disastrous.

To be armed with knowledge adapted to the situation, wisdom and courage to properly apply this knowledge, and authority to enforce obedience to all needful rules and regulations, is at once to be master of the situation. The benefits of such local organizations, even limited in their sphere, is shown by our own local board of health, who have already done so much good by their efforts to prevent nuisances, and to direct the attention of our people to those thoughtless acts which experience has shown produce disease and death. Would it not, therefore, be wise if in each locality organizations could be formed, composed of energetic, public-spirited citizens and physicians, who would act in concert with a state board, and thus make that general which is now confined to but few localities?

But to make this good the more effectual, local boards should, if possible, be compulsory, and be under the sanction of law, armed with proper authority, without which they lose much of their value. Generally, under their police powers, municipalities have authority to protect the public health, but such authority is usually exerted, if at all, when too late, and rather as a cure than prevention. Boards of health should be compulsory, and not, as now, left to the option of cities, boroughs or townships.

It has been found from experience that local authorities are slow to act in these matters except in cases of emergency, and then find themselves unprepared. Besides, when optional, it will be found that when such organization is effected, in many cases it becomes useless by reason of influences brought to bear upon its members.

Too often politics enter into these matters, and thus a few influential citizens can prevent any action whatever. Neighborly kindness and a desire not to wound the feelings of others often restrain us from doing that which we know to be a duty, and which we would not hesitate in doing if the law commands us to act. It may also be doubted whether, under existing laws, there is sufficient power vested in municipalities, except in the large cities, which would warrant certain summary proceedings at times made necessary. But even if there is, the threats of law suits and the doubt as to the right to proceed, makes us hesitate to act when the effect of such action may cause loss and damage to others even though it be for the public good.

The rights and duties of health officers should be clearly defined by law so that well-meaning officials may not be made to suffer when acting for the public for mere errors of judgment. Every lawyer is aware that when an officer of the state board of health is called into the community to investigate and report upon an alleged nuisance, or to report upon a matter affecting the public health, that there is at once created a prejudice against him as an intruder, and if a suit is the result, the party accused most generally has the sympathy of the locality with him, and the officer considers himself fortunate if he escapes without payment of costs. This would not be the case if a local board acted in the matter. It would be felt at once that they could not be actuated by any other than proper motives and a desire to benefit the community. Another most important advantage to be gained is through the information communicated by the local to the state board, in the shape of reports as to particular cases not of frequent occurrence. Such cases invite discussion, research and investigation leading to good results. To a great extent, of course, this end is obtained through local medical societies, but this depends upon the disposition and will of the physicians having the case in hand.

Given a case involving symptoms of contagion, it must be of inestimable benefit to the physician to have the opinion of a competent body, such as we assume a state board would be, upon the subject, rather than to rely solely upon his own judgment, or his particular county society, no matter how competent its members may be. The benefits of discovery, the interchange of thought, combined action and the result of careful consideration upon such subjects cannot but be of advantage.

It is as wise to enforce and enact laws to protect health as property, when it can be done without infringing upon the rights of individuals; and it is no more wrong to treat that which affects our health as an enemy to be punished, than it is to punish the thief or the common scold. How this shall be done can safely be left to those who have made these matters their special study. Details are at present unimportant; the necessity now arises for some expression of opinion that will result in bringing the matter before the law makers.

The Legislature of Pennsylvania has to some extent seen the wisdom and necessity of state action in this matter, and the result has been the act of June 3d, 1885, establishing a state board of health; but this was a feeble beginning, and although the results have been highly beneficial it is not entirely satisfactory, owing to the limited appropriations for its support. It consists of six physicians whose duties extend all over the state. It is required to make sanitary inquiries respecting the causes of disease and especially of epidemic diseases, including those of domestic animals; the sources of mortality and the effect of employments, conditions, habits, foods, beverages, and medicine upon the health of the people; and it shall disseminate information upon these and similar subjects.

The organization of local boards in cities, boroughs or other districts is entirely optional with those localities. It is also authorized from time to time to engage suitable persons to render sanitary service, or to make or supervise practical and scientific investigation and examinations requiring expert skill, and to prepare plans and reports relative thereto: and the total expenditure of the board for one year shall not exceed $5,000.

The present law is defective in not supplying the proper machinery to enforce the proper sanitary regulations, and in not requiring the formation of local boards to aid the state board In some localities this has been done, and with good results, but it should be general throughout the state, aided and assisted by the necessary power to enforce obedience.

When it is remembered that the duties of the state board extend over the whole state, that they are charged with the duty of abating nuisances wherever found, and of bringing offenders to justice, that they must make careful inquiry into all complaints, and make accurate reports of their investigations—and this unaided, except by volunteers—it will be seen that the necessity for the enactment of more stringent sanitary laws and a general system for their enforcement is absolutely necessary. Borough and city councils, school boards or township officials should be constituted local boards of health, to aid the state board: and to them should be added an advisory committee of physicians and citizens.

There always will be found in every locality medical and scientific men, and public-spirited citizens, who are willing thus to act in conjunction with local boards, whose advice and co-operation would lighten their duties and add to their efficiency; and thus would be provided all over the state, competent bodies whose investigations and conclusions upon sanitary measures would banish much of the ignorance now existing upon the subject, and by their valuable suggestions as to preventive measures and the enforcement of the laws bring about results beneficial to the general good. The state should treat this as a practical matter deserving of immediate attention, and thus fulfil one of its primary and most important objects.

DISCUSSION OF THE ABOVE PAPER.

By GEORGE W. ROGERS, ESQ., *of Norristown, Pa.*

Mr. President, Ladies and Gentlemen: In looking over the programme for this convention I see the names of gentlemen representing all the professions interested in a work which contributes not so much to their own profit as to the good of others.

The medical gentlemen to care for the health, the clergyman to care for the spiritual welfare and the lawyers to guard the morals and give tone to the body. The anomaly of my position is somewhat embarrassing. The paper just read by the gentleman who occupies the bench of our county with so much grace and ability is open for discussion. But I have not been so educated. We are taught that when an opinion is delivered by a member of the judiciary, discussion is at an end and criticism is out of taste, and though we sometimes think and often know they are wrong, they are not convinced of their error until a gentle suggestion in the form of a peremptory order comes from that august body who may be found during business hours at the new city hall in Philadelphia. If Judge Weand had concluded with the usual order, that the board of health conduct its labors in accordance with the principles of the opinion, then judgment of approval would at once have been entered and the case ended

But the subject of sanitation is of momentous importance not only to those who are advising its enforcement, but reaches the health, happiness, comfort and prosperity of every man, woman and child, whether in town or country. Life and death, health and disease have been waging a conflict since men had existence, and in the early ages, long before civilization had advanced, until comfort, convenience and style had led to a disregard of the more important considerations of health, happiness and prosperity, the subject of hygiene was of individual and national consideration. The scrupulous attention to cleanliness; the extreme care in the preparation of food; the isolation of the sick and the frequent and thorough ablutions and perfect ventilation enjoined by the old Mosaic code, attest the necessity for a strict observance of sanitary laws and the singular immunity from disease that was enjoyed by the ancient Jewish nations, has long since passed into history. But within the last century a new interest has started, and scientific men with a philanthropy that has rivalled the ancient philosophers, have pushed their researches into every domain of nature. And now the valuable discoveries that have been made are no longer confined to the laboratory of the chemist or the consulting room of the physician. But the press is carrying into every household the results of their researches, and the lecture platform is calling around it the people, and eminent scientists are instructing them as to the dangers that exist in their own homes and around their own firesides, and the best known remedies for their extinction. In fact, a new science has been evolved called the science of prevention. Food and drink, water and air, are being analyzed, and every enemy of life and health is being exposed and attacked, and, if possible, destroyed. From our youth we were taught that the mystical Pandora box contained all the diseases, and when they escaped to prey upon the race hope was left behind. But upon a scientific analysis of the contents of that wonderful box it was found filled with microbes and bacteria, and when they departed the board of health remained behind. Now, it is to them that we turn for suggestions whereby health may be preserved and disease and death prevented.

The proper ventilation of sleeping and other apartments, the preservation and preparation of food, the purity of water for drinking and culinary purposes, the arrangement of sewers and other drains, the disposing of garbage and the abatement of all stagnant pools and miasmatic marshes, and the necessity for thorough cleanliness, are subjects that no longer are treated as the whim or interest of men may suggest, but must be subject to the revolution made by the retort and the microscope. Infection and contagion are no longer mysterious terms belonging to some mystical science, but are the names of subjects entering into and affecting the health and life of every member of the human family. The prevention of disease from whatever source is of more importance than its cure. Health, continued and unimpaired, is of more value than doctor's fees, and life enjoyed as intended by its Great Author a boon whose preservation calls forth every effort that reason and science can suggest. The overcrowding of our towns and cities; illy-ventilated school-rooms, where our children must breathe an atmosphere laden with poison; the reckless disregard of human life manifested in the dilapidated tenement houses, where the poor are compelled to seek a home; the penurious neglect with which alleys, streets and gutters are allowed to be the hot-bed of disease; the inadequate remedy for the removal of noxious bodies, and an occasional outbreak of an epidemic, call for notes of alarm and warning to be sounded everywhere. The people must be instructed so that not only the officers in charge, but the subjects to be affected, must understand that danger and death are lurking on every side ready to strike the fatal blow at the most unexpected moment. Now, I endorse all that Judge Weand has said, and the people of the state should rise up and insist that our lawmakers use the power they have to not only furnish the state board with the means to do their work thoroughly, but so they can organize local boards, that every infectious spot, no matter how secluded or hidden, shall be sought out and removed. When science, with a disinterestedness that characterizes this age, has done so much, give her all the aid she wishes, so that a high degree of health and long life may be the heritage of the people of our beloved commonwealth.

THE SANITATION OF RURAL HOMES.

By SAMUEL WOLFE, M. D., *of Skippack, Pa.*

In one way or another the idea has rooted itself that the residents of the country districts are the healthy, the robust, the strong, and the long lived; that city life tends to weakness, disease and early decrepitude; that as to matters of health, the country, with its pure air, its fresh, green vegetation, its crystal springs of cool water, its rivers, lakes and mountains, will take abundant care of itself; that the city, with its crowded populace, its polluted water, and its impure atmosphere, demands the closest scientific, sanitary supervision; that to be bodily vigorous, and mentally callous, it is only necessary to live in the country; while to live in the city means affliction with physical delicacy, but endowment with intellectual astuteness.

Indeed, so firmly fixed are these notions that physicians do not even generally recognize that some patients in the country should be sent to the city, while the merest tyro of a city practitioner is ever ready to recommend change of scene and air; ever ready to send his patients into the country.

These opinions embody much that is true, but also some that are mistaken. There is no doubt whatever that the children born in the slums of a large city, or even in the poorer quarters of a smaller town, exposed, as they are, to all the dangers there occurring, incident to season, overcrowding, and moral degradation, have less chance of survival of the period of infancy than is usually the case in the extremest poverty or parsimony of the country. There is no doubt that the country, during at least a certain portion of the year, offers even to adults in the best stations conditions more favorable to the maintenance or recovery of health than does the city.

Indeed, I am ready to admit that the country people should be the healthiest, but I regret that, to be true to my convictions, I am constrained to deny that they are.

And here let me say, by way of parenthesis, that those living in the suburban districts, very many of them in the open country, but who have their employment, their association, their interests altogether in the city or in what pertains to it, cannot be justly regarded as country people. These have all the privileges and perquisites of both city and country, without the disadvantages or drawbacks of either, and are the typically healthy if such a class at all exists. Indeed, no one so well knows how to utilize the sanitary benefits of the country as the denizen of the town.

What then are the problems that present themselves for solution? Are they such as concern our sanitary authorities?

I take it that state boards of health or, more correctly speaking, sanitary conventions, are in some way concerned with every factor of disease or physical incompetency, as well as with every method applicable to their removal or control, whether educational or legislative. Some subjects may be remonstrated with; some may be legislated against; and still others may be wiped out by the execution of already existing laws; by the infliction of ready provided penalties.

To the administration of health laws, it seems to me the country presents many obstacles that are not met with in the town. The people are widely scattered; there is no machinery for surveillance and execution such as exists in the police force of every municipality; they would strenuously resist, and openly rebel against inquisitorial procedures such as town people from habit readily submit to.

The main problem lies, perhaps, beyond the reach of a health board, and is largely a moral question. Though connected with rural homes, it deals more especially with the condition of rural character, of rural sentiment. There is a loss of rustic individuality in the attempt to introduce urban customs. There is the "little knowledge" which is a "dangerous thing." There is the occasional contact, the frequent yet not constant intercourse with the city and its people, brought about by the facilities of interchange, by railroads, telegraphs, telephones, freight and express lines. There is the sacrifice of that distinction, that consecration to sectional influence that nature intends, art desires and policy demands.

These are some of the circumstances which have engendered a race of rural malcontents, with slight frames, uneasy manners, and anxious faces; with weakened bodies, perturbed hearts and worried minds.

A race which cannot give to our great eastern cities the brawn and brain which in the past generation have so largely figured in the perpetuation and success of their great commercial concerns, their political institutions, and their educational forces; which cannot put the heads into their largest mercantile houses, the scientists into their colleges, and the judges on the bench; which cannot take up the line of succession, as the boys who have been acted on by the degenerative influences of high metropolitan life for a few generations drop out and back into obscurity. The Bucks and Montgomery county mothers of this generation had better look well to their laurels, if for the next, Philadelphia is to depend on them for a fresh supply of Jameses, Rothermels, Leidys and Paxsons. These fathers will hardly send sons with rugged but strong and powerful characters to their commercial apprenticeship or to their classical curriculum, but will more likely send out pale, rickety clerks or dudish sycophants, to vie with the man about town in his listless, useless, corrupting life.

Why needs the rustic to be ashamed of his station? He is quite as good as his city brother, and his wife and daughters are the peers of their polished relatives, except in so far as they attempt to be like them; except in so far as they overtax all their energies of body and mind with exhausting shopping tours, full of strained, anxious observation of the furniture and the embellishments of city houses, and of the attire and manners of city pedestrians; full of painful worry how to fill their expensive longings from meager purses, ending in remorseful regret at the final selection of what the invited criticism of their city friends will stamp as shabby or out of taste; except in so far as they degenerate from what they should be—the leaders and promulgators of rustic sentiment into cold exclusiveness; in so far as they fall from the high place of rural commanders to the obscurity of urban privates; except in so far as they drop their genuine qualifications, yield their graces, resign their possessions in order to assume the borrowed plumes which they fancy brighter and more becoming.

Let our farmers, our country artisans and all classes come back to themselves; let them once more deserve the title of sturdy yeomanry, and tempt the poet again to consecrate their lives in the immortality of the pastoral, the lyric and the ballad.

What! you cry; do you wish to relegate the rustic to his primitive condition; to push him back into the darkness of barbarity; into the superstition of the mediæval ages? I would say, yes; rather than let him remain what he now is—the unsuccessful imitator of the citizen. The standards of country life will not permit success after this fashion. The bankruptcy that stares the honest agricultural people of eastern Pennsylvania in the face, yea, that has already almost engulfed them, and plunged them into disastrous ruin and distressful despondency, owes one-half of its cause to this very thing.

But to make the picture not too black; out of all this chaos may come beautiful order; out of this wholesale panic there may come blessed tranquility. This is a formative period, and the country people need not balk their true advancement; need not retire to primitive ignorance; need not relapse into the rudeness of frontier life. They have only to recognize the helpful influences that would act on them; only to appreciate that refinement and culture and health are conditions that though having certain external essentials are not dependent in one station upon the type or stage of such essentials existing in another. I say, let the country people educate heads, hearts and hands to the maintenance of a clear-cut rural individuality; of a high-toned but distinctly rural character. Let them stamp their life with a rank as specific and respectable as that of the city. Let them realize that servile imitation is the mark of the sluggard and weakling, and the begetter of misery and disquiet, while healthy, heroic independence not only springs from power, but creates and commands it, along with respect and success, and what is above all, peace and happiness.

But by this time all of you who have been sufficiently indulgent and self-sacrificing to follow me, are ready to exclaim, "What has all this to do with the sanitation of rural homes?" Too little, I fear, on which to make a clear case for acquittal from the charge of vagary.

But if you, ladies and gentlemen, through either personal or official influence, can bring about such a condition as that obscurely pictured, as a desirable one for rural sections, you will have overcome the abject despondency, the forced submission to circumstances, the abnormal longing for changes which can never come, or which, if they do come, will meet with no graceful acceptance. You will have aroused in the breasts of the rural inhabitants such a spirit of interest in their humble homes that they will accept with most hearty gratitude any plans for making them salubrious. Such a people will not permit the supervisors of their public roads to leave in front of their houses stagnant pools, reeking with organic putrescent matter, teeming with malarial germs, or possibly still more virulent poisons, awaiting the first drouth to resurrect them from their watery graves, and the first gentle evening zephyr on which to float silently and unseen into bedrooms on their mission of destruction and death. Such will not permit cupidity to embargo the head spring of every rivulet, only to liberate it from the greasy portals of a creamery, laden with a vile, malodorous scum, to steal stealthily out over meadow and lawn, from which to rise on the misty air of night to taint the very life blood of the unconscious sleeper whose last thought had been a thanksgiving to a Gracious Providence for having cast his lot in pleasant places. Such will create a sentiment of respect for the few remaining patches of woodland that still remain to grace the rich agricultural bottoms, as well as for the already sadly devastated mountain forests on whose aspect there is written a pitiful prayer for protection. Such people, I say, will create, maintain and enforce a policy that will stay the hands of the defiler more effectively than any mere abstract agitation of the forestry question. Such will not deliberately pollute their own surroundings by horrible quagmires of filth and acridity, fed daily by a torrent of offensive offal, pouring like an intermittent deluge from the kitchen door or window.

Such will not drink water from a well that owes its sparkling brilliancy, which is supposed a guarantee of its purity, to the quantum of organic impurities it has borrowed from the barnyard, the pigsty, or, horror of horrors! the cesspool on the banks beyond. Nor will they offend the transient guest, whom a cruel fate has thrown for a night on their hospitality, by the stale, sickening must of the whited sepulchre, which within is full of rottenness and death, although without a too hard-earned pittance has furnished an exuberance of tinselry, embroidery and tapestry that seeks to allure the eye; but, alas! the nose detects the spare room. Nor will the viands that now grace the table, arrayed with all the fashionable daintiness of the city epicure, have but lately parted company with a cellar whose atmosphere is a mixture of noxious gases emanating from mud floors and decaying vegetables.

Nor will they, when no "company" is present, dine in swine-like haste in hot kitchens swarming with flies, and even in midsummer off fat pork, when the city artisan or mechanic takes his meal of fruit and vegetables leisurely in his dining room, sharing it with his best company, his family. Such, in short, will throng the sessons of our sanitary conventions, and give ready application to the general principles of sanitary science, falling thus within easy reach of the laudable efforts of that self-sacrificing, public-spirited, earnest body of men which constitutes that important arm of the administration, the state board of health.

THE USE OF SALICYLIC ACID AS A PRESERVATIVE.

By HENRY LEFFMANN, M. D., *of Philadelphia*.
Food Inspector of the Pennsylvania State Board of Agriculture.

The question of the use of salicylic acid as a preservative is a hackneyed theme. Attention has repeatedly been called to it in sanitary journals, and the restriction of its use has been discussed by many sanitary conventions, especially in Europe. The evil is not, however, abating in this country, and it seems therefore to be appropriate to say a few words again on the topic. Concerning the general effects of this body I need only refer to a paper previously contributed, among others, to an account of experiments made by my assistant, Mr. William Beam, and myself, published in the *Polyclinic*.

The facts now at hand show that this acid interferes with important digestive processes so that, independent of any unwholesomeness in itself, it is an objectionable ingredient. Furthermore, since it is now made on a very large scale, less care is used in its preparation, and it is more likely to be impure. The usual method of manufacture is from carbolic acid. Several observers have recorded the danger of small amounts of carbolic acid being present. When such impure acid is used in food, a greater degree of objection of course arises. The employment of this body is resorted to to prevent decompositions and fermentations to which organic infusions and mixtures are liable. It is not commonly employed in those preserved foods which—canned fruits, for instance—are easily sterilized by heating, but in beers, malt extracts, catsups and similar perishable articles it is now used without stint. Briefly summarizing the knowledge as to the effect of salicylic acid, I may say that it has the power to suspend the action of the pancreatic secretions as far as regards the digestion of starch, and also to interfere with the action of diastase. Administered, therefore, in ordinary food it will, when reaching the intestine prevent an important function from being fully operative; administered in a malt extract or beer it will stop any beneficial effect that such materials might have as far as regards the malt present. The above remarks apply to the pure salicylic acid; more serious results would follow the use of that not containing any appreciable amount of carbolic acid.

Concerning the effects of salicylic acid, a paper has recently appeared in the *British Medical Journal*, detailing experiments made by Drs. Charteris and Maclennan, of Glasgow. These show that the artificial salicylic acid, by which is meant that obtained from carbolic acid, is decidedly more poisonous than that obtained from either salicin or oil of wintergreen, which are the so-called natural sources. The symptoms produced in animals were first paralysis of flexor muscles, and then death by convulsions. The artificial acid will, of course, be used in trade on account of its price. The experimenters are of the opinion that the greater danger of the artificial is due to impurities, but they have so far been unsuccessful in identifying the particular ingredient. It is worth noting that not only will the artificial acid be used in foods, but that when prescribed in the ordinary course of medical practice, the same form will also be used. Data are not at hand of sufficient extent to show precisely what effects on the general health are produced by the continued use of salicylic acid. But there can be but little doubt that it must be objectionable. Several of the governments of Europe have investigated this question through commissions including some of the most distinguished medical authorities, and as a result of reports made by these have prohibited the employment of this body. An incidental objection to its indiscriminate use is often overlooked. It is in some cases, at least, a cover for carelessness or imperfection in manufacture. It is easy to rely upon it for the preservation of any article, and thus to neglect other and less objectionable methods, or to take less care as to cleanliness in preparation. Liberal doses of the perservative will make amends for all errors or imperfections. Thus, by the want of restriction and the competition between dealers the condition grows continually worse. At the present time a number of prepared preservatives are upon the market intended for a variety of uses, and many of these are composed largely of salicylic acid.

The question, of course, arises what practical method is there of reaching this abuse. The system of government under which we live does not permit such summary measures as have been resorted to in the same emergency in Europe. We cannot secure an imperial decree, nor an order of council. There is , however, a preliminary method of approaching this evil which I think is entirely practical and as fair as any one could expect. That is, to insist that all persons who employ salicylic acid in the preservation of any article of food or drink should be compelled to place in a conspicuous place on the label of each package a statement of the amount used. Farther the amount used should not be permitted to exceed a certain proportion. As investigation progresses, it will be found possible to dispense more and more with the use of the acid, and the limits should gradually be drawn in. Thus it is known that malt extracts can be preserved without its use, for good extracts are now on the market that do not contain it; therefore it would be perfectly permissible to forbid its use in these. Its employment in beer is also not necessary, and consequently should be forbidden. Concerning the label indicating its presence, it may be said that since any attempt to prescribe in writing the form of such label is generally circumvented by dealers, the proper plan would be for the sanitary authorities to reserve the right to design, and approve the form of label, and to place severe penalties upon any attempt to employ the article without the label or to conceal or render it invisible when attached.

THE DISPOSAL OF GARBAGE IN NORRISTOWN.

By J. K. WEAVER, M. D., *of Norristown, Pa.*

To gather and dispose of the waste matter under the different forms in which it exists in domestic life and as a result of business activities of our larger towns and cities, without offending the senses or polluting the air we breathe or the water we drink, is one of the questions which is agitating the sanitary world to day, and to the solution of which the best efforts of sanitarians in this and the old world are directed.

There was a time when this question did not press so hard for an answer. When what are now cities were villages sparsely populated, and waste matter limited, and its disposal could well be left to take care of itself or to those secret forces of nature's laboratory in which its organic contents would be decomposed and rendered harmless.

But with the increase of population, the rapid growth of cities, the closely-crowded dwellings, and their still more closely-compacted inhabitants, nature's forces were found inadequate, and the ingenuity of man was called upon to devise a method by which the refuse of human life could be disposed of in a manner at once sanitary and give immunity from nuisance.

Happily for us, although we are still in the period of experimentation, rapid strides have been made in this direction in the last few years, and its complete settlement would seem to be almost within our reach.

These are the principal difficulties in the way, as in all matters pertaining to health: Ignorance on the part of the people, and indifference, often born of the same parent, on the part of the officials.

The education of the masses in the essentials of health, and the relation of filth and dirt to disease, is one, if not the principal duty of local and state boards of health.

It is no less the duty of borough and municipal authorities to provide such measures as will promote the health and prevent diseases among the inhabitants, than it is to give them good government or well-paved streets.

I doubt not that the state board of health in our borough at this time, and the presence of some of the leading sanitarians of this and other states, as well as the active participation in these proceedings of the clergy and legal profession, will give a great stimulus to and quicken an interest in matters pertaining to the sanitary betterment of Norristown—may we not hope the whole Schuylkill valley?

The subject of the disposal of garbage in Norristown is the one upon which I am requested to make some suggestions.

Under the generic name of garbage I will, for my purpose, include all refuse and offal from the households, business places, markets, hotels, street sweepings, etc.

The question of the disposal of human excreta, or night soil, will not be included, as its consideration would consume more time than is at my disposal.

This waste or refuse may be divided into liquids and solids. Under liquids we have the discharges from the kitchen, principally dish water, bath room, washstands, etc. In a town like ours, where sewer connection is the exception, the disposition of these wastes is more important than at first sight would appear, both from the quantity discharged (constituting nine-tenths of the offensive residue of our homes) and the composition of the effluent.

From the basins and baths we have the feathery masses of dead epithelium, or outer skin of the body. From the laundry we have the organic scourings of soiled clothing, which are often specifically infected, and, therefore, a fertile medium for the development and growth of disease germs.

From the kitchen are discharged the dish and other general waters which have been very appropriately termed weak organic broths, readily responding to inoculation, and, in fact, all the waters which are used in the household are so charged with organic waste as to make their retention in or about homes imprudent, if not dangerous.

If there is sewer connection the best disposition that can be made is into a well trapped and thoroughly ventilated sewer, its convenience all the year round being a strong argument in its favor.

In the absence of this method of disposal, the waste pipes from the bath or wash stands are usually attached to or run into the rain pipes of the house and the contents find their way into the street or alley, where, together with the liquid waste from the kitchen, they find their way slowly for a square or two, or even three squares, giving off offensive odors, creating here and there stagnant pools of greasy and foul looking nastiness, until they finally discharge themselves into the nearest sewer, which they have had so long a way to go to find, or, what in many places is more likely, to throw the dish water in the immediate vicinity of the kitchen door, forming artificial swamps, and possibly finding its way to the foundation walls, rendering damp and offensive the soil and making all attempts at neatness and cleanliness impossible.

In cases where there is no infectiousness there can be no serious objection to thus disposing of liquids from bath and wash stands, especially if it is followed by copious flushings of clean water; but to make this disposition of kitchen or laundry water is, to say the least, questionable, and should, if possible, be avoided.

What then can be done with it? It is possible and practicable in a property where there is a small plot of grass or garden to conveniently and economically dispose of these fluids by distributing them over the grass or around the roots of trees or shrubbery; and it is not a little surprising to find the large amounts of fluids that are thus absorbed and how much they add to the fertility of the soil and the luxuriousness of the growth.

It has been found by experience that a space twenty feet by twenty-five feet would be ample to utilize all the slops of an ordinary household. An equally effective but more expensive method is by subsoil drainage, by which the fluids are conducted through loosely joined drain pipes at proper depths to different parts of the ground. The only drawback to this method is the danger of obstruction in the pipes when not properly laid and necessitating some means of periodic flushings.

Another method is to conduct them into a cistern, or other water-tight receptacle, and at intervals pumping out and distributing them as fertilizers.

If your premises are too limited to employ any of these methods, a very practical and economical way, suggested to me a day or two since by a practical housekeeper, is to put all the refuse of the house, liquids and solids, into a barrel or box, mixing with them the ashes from stove or range, thus absorbing the excessive moisture, and have it all removed as often as necessary. The simplicity, convenience and economy of this plan will make it worthy of trial, the ashes serving the dual purpose of absorbing and disinfecting the mass.

The disposal of the grosser refuse matter of a borough like Norristown is a task of graver importance, and difficult of successful accomplishment. The welfare of the people, in all that pertains to their health, their prosperity and happiness, demands a plan which shall be economical, thorough in its execution, and without offense.

The methods among housekeepers are various. In small families, where the amount of waste is meagre, a very common way is to throw the offal into the chicken yard or over the back fence into the alley where the chickens, dogs and cats become the scavengers. The most popular resort is to the slop barrel, or swill pail, near the window or door, or, among more tidy housekeepers, at some distant corner of the yard, and, when full, taken away by the scavenger and fed to pigs, or possibly to milch cows.

A very small proportion of housekeepers have adopted the most cleanly, economical, and rational method—incineration in the stove or range.

There are few, if any, houses where the ordinary kitchen range or house furnace will not be found a rapid and complete consumer. That it can be done has been demonstrated in our own home where, for years, all animal and vegetable matter is consumed in the ordinary kitchen range, the liquid waste is disposed of in the way above mentioned, and the slop barrel and the swill tub are things of the past. A little time and patience and judgment are all that is necessary to be successful.

Put the refuse inside the range near the fireplace, first removing excessive moisture, and in a few minutes the mass can be put on to the fire, and you will be surprised to find in what a short time it will be consumed, the material itself becoming a very fair fuel. If this method were adopted in households of ordinary size it would do away with much, if not all the accumulation around the house, and the question of the disposal of garbage would be largely solved. The growing importance of this question is being appreciated by our housekeepers, and an organization is in existence in New York City, and one is now forming in Brooklyn, to look into the matter and make this method still more efficient.

There has been devised, and it is now in process of perfection, "a famliy garbage burner," that can be attached to the ordinary kitchen range into which the refuse is placed and rapidly destroyed or consumed, and without odor or inconvenience. The price being within reach of all it ought to become popular, and is especially adapted to small hotels, or restaurants, or large families.

There is a device called the fire closet, which is used for the same purpose, intended for use in large hotels, public institutions, colleges and seminaries, and which is said to accomplish the purpose of its construction with small cost and without offense.

There is a borough ordinance which prohibits the throwing into the streets or alleys of any animal or vegetable matter, which, up to the time of the formation of the board of health, was entirely unheeded, and any convenient lot or hollow, or low place was regarded as all-sufficient for the purpose. But the offal from grocery stores, markets and manufactories is now deposited upon dumping grounds selected by the board of health and adopted by the borough authorities.

Under the supervision of the street supervisor the offal from the market and scrapings from streets, are frequently and systematically collected in the carts of the borough and deposited in the same place and carefully covered.

We want it understood, however, that this dumping ground is not to be used as prospective building sites for the "gradual murder of future tenants," but is the location upon which, as the progress of our rapdily growing borough, (soon we hope to be a city) demands, a street is to pass.

This spot being a deep hollow of considerable area, the deposits will be deeply buried out of sight, and at such distance from any future dwelling as to preclude the possibility of the air, any cellar or house being contaminated, or the pollution of the stream of the Stony Creek, which is not far removed.

Conscious of the imperfection of the present method of disposing of the garbage in our town, and the need, nay, the necessity, for a cleanly, speedy and economic one—the board of health a few weeks ago recommended to the borough authorities to take into consideration the advisability, so soon as the finances would warrant, of the construction of a furnace at some convenient location for the destruction by fire of the refuse accumulation of our town.

The advantages of this method are enhanced by the important fact that they are equally adapted to the destruction of dead bodies of domestic animals of all sizes and in whatever conditions, also the waste products of the abattoir and slaughter houses, and likewise the contents of the cesspools, and all human excreta.

These furnaces or crematories are in successful operation in several large cities in this country, and still more extensively in foreign countries, especially England, where more than three hundred are in use; and so rapid is the growth of sentiment in favor of this method that it is likely that it will soon become the recognized means in all English cities.

That the same sentiment exists in this country, which is also on the increase, is attested by the fact that they are successfully used in New York City, Coney Island, Governor's Island, Minneapolis, Des Moines, St. Louis and other large cities of the west. As an indication of the general character of the awakening on this subject I see that it is proposed at the International Medical Congress, which meets in Berlin in August, to take steps looking to the more general adoption of fire as the great destroyer of all human waste. And it is likely that steps will also be taken to make cremation of the human body legal in the different countries of the world.

A New York company has offered to enter into a five years' contract with the city, under good and sufficient bonds, to take charge and dispose of all the garbage, ashes, and street refuse of every kind, at a sum not to exceed the present outlay for the disposal of garbage, which is about $250,000 a year. The company has a capital of $1,000,000 and purposes, if its offer is accepted, to erect crematories at each dumping station—fifteen in all with extra ones for emergencies, making a total of eighteen—and to have the first of them in operation within three months, and all within a year.

So complete in construction, so thorough in their execution, are the crematories in their work, that several tons of the most promiscuous collection are consumed in a few hours, and that, too, without odor, or the giving off of noxious gases; are economical in the use of fuel, demand a small outlay of labor to conduct them, and that the cost of construction and maintenance is within the easy reach of any town of the size and population of Norristown.

It is further claimed that the ashes of products resulting from the combustion are of such a value as a fertilizer as to make up a considerable share of the expense of maintenance. It is also claimed that when once the fire in these furnaces is fully under way, that the contents themselves become valuable fuel for their own destruction.

And so, while our provision for the disposal of the refuse of our town is somewhat crude and imperfect, it is the best we can do for the present. But we are alive to the importance of the subject, and our authorities and people are becoming interested, and we are looking forward to a time, which we hope is in the very near future, when Norris City will be noted not only for beautiful location, comfortable homes, and well laid streets, but shall have made such advancement in all matters pertaining to the health of the citizens as to entitle her to stand among the foremost of sanitary municipalities.

THE FUNERAL DIRECTOR AS A SANITARIAN.

By R. R. BRINGHURST, *of Philadelphia.*
President of the International Directors' Funeral Association.

Mr. Chairman, Ladies and Gentlemen:

Those of my calling certainly feel highly honored in the knowledge that for the first time we are permitted to be heard on your platform in a public meeting of your organization; but that honor is somewhat abated when we remember we are here by suffrance, not on earnest and oft-repeated invitation. Only last Tuesday evening was I informed of the meeting here yesterday and to-day, and having attended a similar gathering in Philadelphia a few years ago, I was anxious again to be present.

I received word that ten minutes would be set apart in which we could be heard and I will have to be brief; but some, or in fact all, may ask why do you wish to be heard at all? or what on earth can the funeral directors have to say of interest to us? As my authority for this exhibition of assurance on our part I will refer to An Act

"*To establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this Commonwealth*;" the authority under which our state board "lives and moves and has its being."

Section 5 of that act reads thus:—

"The State Board of Health and Vital Statistics shall have the general supervision of the interest of the health and lives of the citizens of the Commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations and inquiries respecting the causes of disease and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, conditions, habits, food, beverages and medicine on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the Legislature, and at such other times as it deems it important, institute sanitary inspections of public institutions or places throughout the state. It shall codify and suggest amendements to the sanitary laws of the Commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases."

If, as stated in the first part of this act, you have general supervision of the interest of the health and lives of the citizens of the commonwealth, why not call to your aid a calling that can, and under your direction should be compelled to, render all assistance in their power; and if the members of that or any other calling are not sufficiently imbued with a desire or the ability to render that assistance, then take advantage of your prerogative as laid down in the latter part of the section quoted—"It shall codify and suggest amendments to the sanitary laws of the Commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases." Now to you as medical men and women and as sanitarians, I put the question, who stand more in need of enlightenment on sanitary subjects or can, when properly educated, render you greater assistance in stamping out epidemics, or, better still, aid you in preventing contagion from becoming epidemic, than the undertakers of our state? I say, when properly educated: for I here repeat a statement I made in Toronto at our last International Association, and I made it without any desire or intention of belittling those of our calling, but rather to arouse them to the true condition of affairs and the application of a remedy. There is a greater amount of ignorance among the undertakers of our country than in any other semi-professional class. This should not be, nor would it if the people of our state were thoroughly cognizant of the fact. Why are we brought face to face with such a deplorable state of affairs? Simply because the proper amount of importance is not attached to our calling by just such people as are gathered together here. You throw around our citizenship, in the shape of legislative enactments, the strong arm of protection against the unqualified physician, druggist and lawyer; even the baseball player has rights in the eye of the law that unscrupulous managers are bound to respect; but the undertaker is allowed to go his way and ignorantly and blunderingly shamble with his patient from the death-bed to the grave.

I will not treat discourteously a privilege, nor do I wish to be understood as under-rating the ability of the followers of an honored profession, or cast discredit upon our institutions of learning, but I will give voice to an honest conviction, born of sights I have witnessed and discussions I have heard, in that I believe your work as sanitarians would be greatly benefited if the standard for graduation in our colleges was considerably raised. When the college door closes upon the graduate, and he faces the world of active practice, he has but the rudiments of that education which must be built upon and added to by practice and application, practice in that he honestly and conscientiously applies that which he has already learned, and application in that he not only subscribes for but gleans from the periodicals and literature of the day the advanced ideas of giant minds of his profession. If this be so in your case, why not in ours? Give the undertaker a chance. We have local and state organizations in twenty-three states, and an international organization. Our last international convention was held in Toronto, Canada; our next is at Omaha, in October. At our state conventions we have lectures on scientific subjects. Dr. Joseph F. Edwards, of your state board, has addressed us on several occasions, as has also Dr. John B. Deaver. But, you may ask, how can the undertaker become a sanitarian? In what can he become in any way a help to us in the truly great work we have in hand?

Allow me to suggest he may and should become a great help to you and the public in general by being able to decide the oft-raised question, "has death really taken place?" by being able to take up the work of disinfection where the doctor often leaves off at the death-bed of the patient, to render non-infectious the dead body, the clothing, the furniture, the very atmosphere of the house, and as equally important his own person and clothing, so as to avoid even the resemblance of a possibility of carrying contagion from the house of death to his own or any other family. He should be able, and at all times prepared, to so prepare a body dead of a non-contagious disease that its shipment to any portion of the globe might be made without any risk of inconvenience or unpleasant odors to railroad employés or patrons. He should be so educated to the importance and responsibilities of his office as not to go direct from a case of contagion to street car or other public conveyance, or his own family. He should exercise the same care as to the safety of the public after attending a case of diphtheria or scarlet fever, as he should after that of small-pox or spotted fever; and yet how many undertakers are there who attach but very little importance to the two former diseases? It is not necessary, nor will time allow, to enter into details; but all sanitarians should go hand in hand, be he doctor, lawyer, merchant or undertaker, and I beg to indulge the belief that if all physicians would but give your pet theme due consideration; were all funeral directors thoroughly alive to their responsibility, and our citizenship in general properly educated upon this subject of sanitation. your educational gatherings such as this would be attended by the leading minds in medicine, surgery, law, and mercantile pursuits, and the largest building in the state would not accommodate the attendance.

The physician when called to a case requiring prompt and heroic treatment, understands the cause and can apply the remedy, but does not have time to explain details to family or friends. So it is with our appearance here today. We come to call your attention to a place in your sanitary fence where the bars are down: to say to you here is a line of business that should, as far as contagion is concerned, be a company mustered in the grand army of the Red Cross, to offer our assistance in your noble work and ask your aid in placing ourselves in proper position. In making this offer we modestly ask that our experience be considered and we be allowed some small voice in shaping the necessary rules and regulations that may be made so as best to control our actions and bring out the largest results.

It would be considered the veriest presumption and display of ignorance on the part of an undertaker to suggest to the doctor or family the quality or size of a dose to be given a patient, or, in other words, to interfere with the family physician; and yet how often is it the case where the physician continues to exercise authority and give directions after the undertaker has been called in? This is explained by the fact that we are not credited with any knowledge or given much of a sphere in which to cut a caper. That we have not a collegiate education is true, and only within the last few years we have had the benefit of the experience of others, and yet we claim our knowledge, based on experience, fits us to aid the legally constituted authorities of the state to mark out a line of action that will, with the efforts of other sanitarians, bring the desired results. What we ask is a law compelling every present or prospective funeral director to prove to your state board of health, or some other efficient and trustworthy board, his or her fitness to follow their calling.

We ask that this matter be not dropped. Some time ago warnings from the Conemaugh valley were given, oft-repeated, yet unheeded, and the terrible calamity of Johnstown plunged a nation in sorrow; a grand jury condemned the shortsightedness and the action that left green fields for grass and truck and reared a six-story building in which to confine the feeble-minded; that warning was born away on the wind and we with all nations stand aghast at a calamity that penned up and incinerated a large number of the most afflicted of God's creatures. Our history is made up of successes and failures, and until the law-making power of the land is influenced by the thinkers of our country, the failures will be well up with the successes.

The time has passed when embryo editors, the minstrel and humorist, point the finger of scorn or ridicule at any one, and figure the doctor or undertaker with a broad smile when they contemplate cash profit from visitation of contagion. We are willing, yea, anxious, to go hand in hand in this grand and glorious work. Allow us to aid you, or, in other words, demand and invoke the law to compel a compliance with your demand that all branches of professions and business may do their share to bring about cleanliness, carefulness and sanitary education, so that in the near future the bright sunlight of intelligence, application of preventives and remedial agencies may drive contagion and epidemics from our shores, and all as sanitarians may say of our effort as explorer Stanley says of his, "The end crowns the work."

DRAINAGE AND SEWERAGE OF NORRISTOWN.

By P. Y. EISENBERG, M. D., *Member of Board of Health, Norristown.*

I think it was Cowper who wrote that "God made the country and man made the town."

From a sanitary standpoint there are two widely different conditions expressed in this sentiment: One having all the essential requisites for the development and prolongation of health and life; the other possessing such favorable surroundings as foster disease and death.

Under the sunlight and in the pure air of the country, countless forms of life abound, each running rapidly to decay,and as each dies myriads of lower organisms quickly seize and feed upon it, and out of the destruction of the old develops new life. From year to year and from century to century, do the green fields and forests maintain a perfect balance between the formation and destruction of life.

But now man steps in with his artificial constructions and sweeps away this perfect equipoise.

Under his foot the green earth grows bare. By the work of his hand the lifegiving sunlight is either shut out or falls upon burning sand, and the virgin soil becomes saturated with the excretions of his body.

Thus the invader of nature's domain transforms the ground around his dwelling, as well as the air in and around it, into a fertile soil for the germs of disease; and when pestilence sweeps through his home amid the anguish and the moans of his sick and his dying, he speaks of this trial of sorrow as a "dispensation of Providence" and invokes God to shield him from the terrible plague which was planted by his own hand.

"Go home," said Lord Palmerston to a Scotch delegation who were asking for a day of fasting and prayer to protect them from pestilence, "Go home and see that your towns and cities are freed from those sources of contagion which, if allowed to remain, will breed pestilence and be fruitful in death in spite of all the prayers of a united but inactive people."

This blunt advice, though given many years ago to the Scotch Presbyterian delegation, is in strict accord with the most recent teachings of sanitary science. In the sinks, drains, cellars, gutters and the ground that receives excrement and liquid refuse, are found the sources of contagion which the English Premier had in mind.

From these constantly arise an effluvia laden with germs or microbes (that cause disease) which, under favorable conditions, multiply in almost incredible numbers in a few brief hours.

For the purpose of preserving the purity of the air in densely populated areas, proper drainage and sewerage are as indispensable as the maintenance of the natural secretions of the human body are essential for the promotion of health.

In fact drainage and sewerage are the excretions of a community, and should, therefore, be carried far beyond its territorial limits.

Extensive researches in Germany, England and America have established the fact that malaria, diarrhœa, rheumatism, bronchial catarrh, and especially pulmonary consumption, are directly influenced and their development promoted by damp cellars within and wet soil around dwellings.

Drainage, for profit and convenience as a means of reclaiming land for agricultural purposes, has been a matter of history for all time, but drainage for the better preservation of health is a sanitary measure of modern times.

In towns and cities drainage is designed to accomplish two results:

First. The removal of storm water from roofs, yards, streets and pavements.

Second. The location of a lower level for ground water.

The first result is generally accomplished by surface drainage by means of paved gutters.

The best sanitary engineers agree that whenever practicable to do so, this method is the best possible for the disposal of storm water and street wash; sometimes, however, because of too great accumulation of storm water at a given point, it becomes necessary to relieve the overflowing gutter by subsoil pipes or drains.

The second result is effected by underground channels. This kind of drainage is absolutely necessary in all water logged soil wherein the level of ground-water approaches the surface.

It is because of this high-water level that we have water in the cellars of dwellings.

Norristown possesses excellent natural facilities of both soil and slope, for a thorough system of drainage and sewerage.

The soil is mostly of a sandy formation, therefore very porous and the slope approaching either the river or the two streams which traverse the town, is more than sufficient for an exhaustive system of drainage and sewerage.

A topographical investigation of the site of Norristown discloses the fact that because of the two streams—Saw Mill run and Stony creek—coursing through the town from north to south, three distinct areas for drainage purposes are formed; an eastern, a middle and a western district. The largest portion of each of the three, is naturally drained by either Saw-Mill run or Stony creek.

The great temptation, therefore, is not only to drain but to sewer the town into these two streams.

Herein lies one source of danger to the public health of Norristown and one which becomes accumulative as the population increases.

The first sewer ever constructed in Norristown was built forty years ago by the authorities of Montgomery county. It extends from the county prison on Airy street to Green street, then east on Penn street to Saw Mill run, discharging its contents into the bed of that stream. This sewer is but twenty inches in diameter and built but two feet under the surface of the street. It was designed to carry off sink drainage, liquid refuse and the excretions from the Montgomery county prison, containing an average population of fifty persons.

In 1885, a short sewer three and one-fourth feet in diameter, nine feet under the ground, was constructed on Green street, connecting the prison sewer at the corner of Green and Penn streets with the Main street sewer.

That part of the sewer on Penn street leading to Saw Mill run was then abandoneed. This sewer is subject to repeated flushings by the prison management but in long continued dry weather, being so near the surface, the older portion becomes offensive. The newer portion has an inlet at its head by which it is flushed by storm-water.

The change of outlet of the prison sewer from Saw-Mill run to the Main street sewer was the result of a suit against the authorities of Montgomery county for maintaining a nuisance in the discharge of all the offal and excrement from the prison into Saw-Mill run near the planing mill of Guest & Longaker who were prosecutors in the case.

The evidence in the suit disclosed the fact that a few yards northeast of the outlet of the prison sewer is the mouth of the Carson alley sewer, also discharging equally as offensive matter though less in quantity, into Saw-Mill run. The Carson alley sewer receievs the discharges from a slaughter house and the contents from six to eight cesspools, and was built by the borough of Norristown.

The next sewer was constructed on Airy street beginning near Violet street, it extends to Walnut then on Walnut to Carson alley, and is three and one half feet in diameter, and drains the water of a ravine in the eastern portion of the town, known as Bateman's hollow. This sewer was built twenty years ago, and strange to say it passes in front of four or five houses whose cellars contain water all the year round. and yet the owners have failed to put in drains to connect with this sewer, neither has the borough authorities taken any steps towards compelling the property owners to drain their cellars into the sewer as a proper sanitary measure. Almost constant illness is found among the tenants of these houses.

The writer of this paper has personal knowledge of cases of rheumatism, bronchial catarrh, diphtheria, malaria fever, typhoid fever in these houses during the past two years.

This sewer up to its connection with the Carson alley sewer only receives storm-water and street-wash.

The Carson alley sewer extends from Walnut street on Carson alley to Saw-Mill run beyond Arch street. It is three and one half feet in diameter and receives storm-water and street-wash by two or three inlets, besides having connections with one slaughter house and more than a half dozen cesspools.

This sewer bids fair to excel its former rival, the old prison sewer, in polluting and rendering dangerous to that part of the town the sluggish stream of Saw-Mill run.

The third sewer built in Norristown and one of the greatest importance is the Main street sewer, or the Main street sewers, for there are two of them, one connecting with the other, and built in form of two inclines, with the union of their highest elevation at Swede street, and one draining east and the other west.

The East Main street sewer extends from Swede Street to Mill street, then on Mill street to the Schuylkill river. The greater part of this sewer was built in 1873, while the shorter or connecting portion was not constructed until ten years later. It is four feet in diameter, has four side inlets and five corner inlets to receive street-wash and storm-water. Its construction has made it possible to drain every cellar fronting on Main street, which previously contained water.

This sewer has water-closet connection, and receives at Green street, as already mentioned, the sewage of the county prison.

The West Main street sewer was built in 1873, from Cherry street to Stony Creek, and the connecting sewer in 1883. It therefore extends from Swede street to Stony Creek. It is three feet in diameter, has three corner and four side inlets, has connections with some dozen cesspools, a slaughter-house and a soap-house. In long continued dry weather it makes itself obnoxious at its outlet into Stony Creek near Main street station. There is therefore a continuous sewer from Stony Creek east on Main street to Mill and thence to the Schuylkill river.

In 1875 a sewer was built on Dekalb street from Main street, to the Mill Race near the river. It is three feet in diameter and receives cellar drainage and cesspool matter. It has five inlets.

In 1886 a short sewer was constructed on Oak street, from Arch to

Saw-Mill run, for drainage purpose only. The sole object in building this sewer was to relieve the accumulation of storm-water at this point which previously produced extensive washouts in the streets. No sewage matters enter into this channel.

Last but not least is the Marshall street sewer, which extends from Noble street to Stony Creek at the bridge. It was built in sections, the older section was constructed in 1875 and the newer in 1889. This sewer is four feet in diameter, has a steep grade, which is flushed by storm-water received by ten corner and five side inlets, and drains, cellars, water-closets and a short sewer on Chain street, some two hundred feet long which receives the refuse cleansing of the western market.

The Marshall street sewer from the west, like the West Main street sewer from the east, discharges its sewage into Stony Creek in the midst of a densely populated district.

Both Saw-Mill run and Stony creek are sluggish streams, and are roused sufficiently to cleanse their polluted beds only by some prolonged rain or some sudden violent storm. The fact that nature has given the town these two channels, offers the temptation to sewer the town into them, especially into Stony Creek, which in addition receives manufacturing waste. When the volume of water in the river is lessened by drought, and none so carried over the dam, Stony Creek becomes very offensive.

A brief examination and summary of the sewers of Norristown disclose the following facts:—

One. That there are two miles of sewers of circular shape of from two to four feet in diameter.

Two. That they were built more for drainage than for the discharge of sewage.

Three. That no one of these sewers ever runs more than half full even during the heaviet storms.

Four. That no attempt was made or has been made to ventilate these sewers filled as they often must be, by foul and noxious gases generated by the decomposition of cesspool matter, and sink drainage.

Five. That these sewers were built as the occasion for them arose piecemeal at a time without any direct reference to the sanitary effect of their construction upon the health of the community through which they pass.

The primary object in sewering towns and cities should be for a better preservation of health, while the thought of profit and convenience should be of secondary consideration.

The accumulation of filth from organic refuse, kitchen waste and cesspool deposit increases in a direct ratio with the increase of population.

To prevent the soil pollution which is the natural result of such accumulations, should be the object and aim of a system of sewerage.

Men may stop their ears for a time, and treat this matter of accumulation with indifference, but sooner or later some terrible epidemic will burst upon them, like some mighty tornado filling the streets and houses with the dead and dying.

Such was the experience of the city of Memphis, eleven years ago. Prior to 1878 yellow fever had a firm hold upon the community relaxing its grasp somewhat, during the winter months only to renew it more strongly during the following summer. By a system devised by that eminent sanitary engineer, Colonel George E. Waring, Jr., the death rate of Memphis in ten years was reduced twenty per cent.

Memphis, unclean and unhealthy of 1879, has become Memphis, pure and salubrious of to-day.

This sounds more like a tale of romance, than a sanitary truth, and is due to the removal of the cesspool, and the substitution of water-closets with sewer connection: the thorough cleansing of the streets, and the prevention of any further soil saturation from sink drainage or kitchen refuse by a complete drainage of the entire city on the separate sewer plan.

Time forbids detail but suffice it to say, that all sewage matter strictly speaking, enters one system of smooth bore pipes, which run full when flushed daily from the flushing tank at the head of each sewer.

All storm-water is discharged by a separate system of sewers.

For cleansing the sewers of Norristown, of organic deposit the decomposition of which must fill the sewer with noxious gases, reliance is placed upon storm-water alone. All sanitary engineers now agree that this means of cleansing sewers is too uncertain, and often too inadequate especially in winter when conductors and gutters are filled with ice and snow, or during a long continued drought.

Rawlinson, says: "There should be a flushing chamber at the head of each sewer, or drain, and that each flushing chamber should be permanently ventilated." In this he is confirmed by Hering, Morin, Waring and many others. If storm-water must enter a sewer with sewage matter then the best form of sewer is the egg shaped sewer, built with its narrow part downward, making the currents strongest and most rapid where the deposit is the greatest. This kind of sewer cleans itself thoroughly, and is gradually being adopted by municipal authorities. The great sanitary question for Norristown is, the "Abolition of the cesspool." A noted authority, says: "Every cesspool is a standing menace to the health of a community as long as it exists while typhoid fever, scarlatina and diphtheria prevail."

In the language of another equally eminent authority we would say: "vaults and cellars for the reception of the most offensive forms of sewage, should not be allowed within the corporate limits of towns and cities." Norristown with her twenty thousand population, has five thousand of such receptacles which pollute the soil, and on some of the by streets make the air almost intolerable after the night-fall in warm summer months. Situated as this borough is upon a sandy soil, and possessing an abundant water supply, there is every reason why the cesspool should exist only in history.

According to C. A. Lindsley, M. D., secretary of the State Board of Health of Connecticut, the death rate of infants, and children is greater in the vicinties of vaults than elsewhere.

The effects of a thorough system of sewerage, by which all organic refuse of whatever kind is discharged from the house by means of sewers, are clearly demonstrated by the report of the secretary of the Board of Health, of the city of New Haven for 1884. In that year sixty-eight per cent. of the infant mortality was upon streets without sewers, and thirty-two per cent. on streets with sewers.

Of the latter, or the deaths occuring on streets, having sewers, eighty per cent of that mortality was in houses having no sewer connections and but twenty per cent. in houses having sewer connections. If these figures mean anything they indicate direct connection between the prompt and efficient removal of all liquid waste and filth, and a lower death rate on sewered streets.

In these days we hear much of pure air and pure water. Our citizens can have neither if the pollution of our soil, wells and streams goes unchecked.

The object of sanitary sewering in a town, is to preserve to a certain extent at least, the purity of these essential ingredients of life and health.

In order to promote and secure such a result all matter of a putrescible character whatever its origin, should be completely and entirely removed, not only from the house but from the town before it has had time for decomposition. In its fresh condition it is rarely a source of danger, and if it can be delivered out of the town by a sufficient volume of water which will smother excrement, and at the same time promptly and efficiently discharge such sewage, the whole problem of preserving the purity of the air we breathe, and the water we drink is solved.

The greatest dangers which over shadow the health of this town from a sanitary stand-point then are the pollution of Saw-Mill run and Stony Creek, by the discharge of offensive sewage into these streams, and the maintenance of the germ, generating and disease-producing reservoir, the cesspool vault.

In towns where there is no proper water supply the existence of the vault must be tolerated, but where such supply is found, its abolition cannot be begun nor completed too soon for the better preservation of the health of the town.

It is entirely foreign to our purpose to have you believe that Norristown is an unhealthy place, for its death rate is low in comparison to most towns and cities; yet this state of health can be made better and the death rate still lower by the sanitary precautions merely alluded to in this paper.

The abolition of the cesspool and the institution of a thorough system of sewerage means less sickness, especially of the infectious type, such as diphtheria, typhoid fever, and kindred diseases.

Decomposing organic matter—animal or vegetable—can and should be made to subserve the economy of nature outside the corporate limits of the borough rather than to accumulate and pollute the soil oftentimes within a few feet of dwellings or in cellars, as is the case in some half dozen places of business on one of our principal streets.

ANNUAL ADDRESS BEFORE THE STATE BOARD OF HEALTH.

By PROF. A. ARNOLD CLARK, A. M., *of Lansing, Mich.*

Coming, as I do, over many miles of territory and from a different state to be with you to-night, I am reminded how, one year ago, when your state sanitary convention was in session, word flashed across the wire from state to state telling of one of the greatest calamities in history—telling how the people of Johnstown had been buried beneath the great ocean of water which for years had threatened them, and nearly four thousand lives had been lost. For days the newspapers of Michigan were filled with the sad, the sickening details of this Conemaugh valley flood. It was the one topic of converassation in drawing room and on the streets. Ministers preached about it, declaring that it could be compared only to the great flood where the waters of the great deep were broken.

Then as the waters subsided and the state board of health came to the rescue of the survivors—removing the débris, and disinfecting to destroy the germs of disease—it was frequently remarked in other states that your state board of health was performing a noble work, and even grumblers admitted that in times of such catastrophes there was some reason for having a state board of health. But

EVERY YEAR MORE LIVES ARE LOST IN PENNSYLVANIA

from diseases which we well know how to prevent than in the great Conemaugh valley flood—diseases which deprive us of our loved ones in the innocence of childhood, the joy of motherhood and the vigor of manhood, and it is to prevent such diseases that Pennsylvania has established a state board of health.

If I were asked to state the most important work of a state board of health I might quote from the law requiring your state board to gather information concerning the causation and prevention of disease and to disseminate such information among the people I would not underestimate the importance of those other questions with which hygiene was concerned fifty years ago. It is important that we have proper clothing, that we have pure food and pure air. You know Voltaire said that the massacre of St. Bartholomew was all because the king could not digest his food, and I do not doubt that bad food has made a great many bad tempers, and bad air, in close, unventilated schoolhouses, has made a great many dull brains; but not one of these questions is so important as the saving of a human life. So it is important that nuisances should be abated, and very wisely your state board is placed in charge of all sanitary interests. Our lives should not be made uncomfortable by unwholesome gases and odors, but as the most uncomfortable thing which can happen to a man is to die,

THE MOST IMPORTANT WORK OF A STATE BOARD OF HEALTH

is the stamping out of disease, the saving of human life.

How can this be done? Let me illustrate:

From what part of the world comes the silk which you ladies wear to-night? Probably from Southern France. The people in Southern France practically do nothing but cultivate silk worms. When they meet in the street, they say not "How do you do?" but "How are the worms?" These worms are to be found in kitchen and parlor. In 1853 the raw silk produced by the worms of Southern France was worth $35,000,000.

But suddenly a great plague broke out among them, and in 1865 the silk produced was worth only one-fifth what it was twelve years before. The worms were found to be covered with little black spots—looked as though they had been peppered, and so the disease was called pébrine. When these spots appeared the worms became sluggish, stopped growing and died.

That great Frenchman, Pasteur, studying one of these little worms with a microscope, saw that its silk glands—the glands containing the fluid which it would spin into silk—literally swarmed with little microscopic germs, and though the worm itself was only one-half inch in length, so much smaller were the germs that he could see thousands of them swimming in the rivers of its body.

Rubbing up this worm in water, he spread the mixture over mulberry leaves, and

FED THE LEAVES TO THIRTY HEALTHY WORMS,

and in twelve days after they ate this infected meal every one of these worms was peppered with the characteristic spots of the disease, while the silk glands were literally charged with the germs.

Pasteur also found these germs on the claws of the worms, and saw that they communicated the disease by scratching one another with their claws. He also put a healthy worm in the same room with a diseased one, and it contracted the disease, showing that the germs of the disease might be carried through the air. He next discovered that moths contracting the disease invariably laid eggs which gave birth to worms which sickened and died without spinning silk.

Little faith was put in Pasteur's experiments until he took a number of eggs—every one of which the cultivators thought was healthy—and after examining the moths which laid the eggs, predicted, in a sealed letter, that twelve of these eggs would turn out diseased worms. At the close of the year the sealed letter was opened and read, and just those worms were found to be diseased which Pasteur had predicted, and those which he had pronounced sound yielded a healthy crop of silk.

Finally, by infinite painstaking, each of these little moths was placed, like a prisoner, in a numbered cell: the eggs were laid in numbered cells, each moth laying about 500 eggs. Those eggs which were healthy were hatched in numbered cells, the diseased ones were destroyed, and thus, by this infinite painstaking, Pasteur saved the worms and restored this crippled industry to France.

Now, as the germ of pébrine passing from worm to worm will cause a great plague among them, so there are other germs which will cause disease in man—germs which, passing from person to person, from town to town, have been known to take whole cities by storm, stagnate industry, paralyze trade and even depopulate nations. And as Pasteur, by isolating the sick worms from the well, was able to save the life and labor of the worms, so the State Board of Health of Pennsylvania, by exactly the same methods, can

SAVE EACH YEAR THE LIVES OF THOUSANDS OF CITIZENS,

and if France could afford to spend thousands of dollars to save its worms, and if the life of the man who reels the silk is worth as much to the state as the worm that spins it, then we may well afford to spend a few thousand dollars to maintain state and local boards of health to protect us against these invisible germs swarming in the air we breathe.

The law establishing your state board of health requires this board to make scientific investigations concerning the causation of diseases, especially epidemic diseases, and as all work for the prevention of disease depends upon a knowledge of its causation, it seems perfectly proper to devote a few minutes to the consideration of the question just what part these germs play in the causation of diseases.

Nearly everyone in these days understands something about germs, and as it takes a microscope to see them, it is generally understood that they are "enormously small." Yet perhaps some of you are hardly prepared for the statement, that if an ordinary match were magnified as much as some of these germs pictured here it would stretch into the sky as far as the Washington monument—would even look as tall as the famous Eiffel tower.

Swarming in a drop of water, swimming like a fish, spinning around like a top, going together in pairs or forming beautiful chains, these little vegetable organisms at times seem almost possessed with consciousness and to be really having a good time. Dr. R. C. Kedzie, describing a drop of water filled with germs, said that it looked like an "animated skating rink." These germs reproduce by dividing, and so rapidly that, as someone has said, if their reproduction went on unhindered the descendants of a single germ would in three days fill all the oceans on the earth Thus it is, that though only a few germs may gain an entrance to the body, they multiply so rapidly that in a few days the strongest man succumbs as Gulliver was bound by the little Lilliputians whom he carried in his pocket.

These germs assume as many shapes as those short-hand symbols which so bothered the brain of David Copperfield, and indeed the arbitrary characters of which he complained were not so arbitrary, despotic and disastrous as these germs. In general, a germ which is round like a dot is called a micrococus, one which is shaped like a match is called a bacillus, while those shaped like corkscrews are called spirilla. Each of these germs has an official title of its own. Thus this germ is known among its neighbors as the *saccharomyces cerevisiæ*. Popularly it is known as the yeast plant.*

This leads me to say that not all germs produce disease. It is a germ which turns our milk sour, a germ which turns it blue, it is a germ which turns sweet meat into carrion, a germ which makes our fruit ferment, a germ which turns grape juice into alcohol. Indeed the process by which a man becomes sick and the process by which one becomes drunk are practically the same. When

THE GERMS OF FERMENTATION

gain an entrance to the grape juice they commence to grow and multiply, and in their growth possess the power of breaking up the grape juice into two substances entirely different—a gas, which escapes in bubbles, and alcohol, which remains. So the germs of disease, gaining an entrance to our bodies, break up our body compounds into a poison or ptomaïne, as it is called—each germ producing its own peculiar ptomaïne and each ptomaïne producing the symptoms of the disease just as the germs of fermentation make the alcohol and the alcohol produces the symptoms of drunkenness—the bleared eye, the unsteady step, the nausea and headache. So similar are the two processes that some time ago those diseases caused by a germ were called "zymotic," because that word means a ferment. The difference between alcoholic intoxication and ptomaïne intoxication is that while the germs of fermentation make the alcohol outside of our bodies, the germs of disease make the ptomaïne inside of our bodies, so that a man sick with typhoid fever is not only being poisoned by a ptomaïne produced in the same manner that alcohol is poroduced, but he is himself the keg in whom the germs are working.

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*See diagram on page 495.

These germs of disease may be made to grow outside of the body like the germs of fermentation—in blood serum at the proper temperature, in gelatine or in beef broth. And you may go to-night to some biological laboratory and you will find there long rows of test tubes or bottles in which these germs, these little vegetable seeds, have been made to grow in gelatine, and you will find among the labels on the bottles the words consumption, Asiatic cholera, glanders, malignant pustule, and just as Pasteur made thirty healthy worms sick by one infected meal, so if you wanted to commit suicide you could choose the disease from which you wanted to die and be sure of getting it. Or, as has frequently been done, you might arrange a dozen different animals in a row, inoculate each animal from a different bottle and produce a dozen different diseases, just as surely as a farmer may sow his farm with a dozen different kinds of seeds and produce a dozen different crops. And as the seeds of thistles always produce thistles and not corn, so

THE SEEDS OF SCARLET FEVER ALWAYS PRODUCE SCARLET FEVER

and nothing else. Or, as Florence Nightingale used to say: "Scarlet fever can no more generate measles than a race of dogs can produce a race of cats."

So these germs can no more arise out of the air out of nothing than can dogs and cats. You know it was formerly thought that animals might be generated spontaneously. Von Helmont once gave a formula for the spontaneous production of mice. Said he: "Take a dirty shirt, put into it some wheat, subject the whole to heat, and after a time you will witness a transmutation of wheat into mice." Now these germs are not easily generated, just because they are small. When you can your fruit, you boil it to destroy the germs of fermentation in the can, then you seal it up tight to keep out the germs in the air, and when you do this the fruit does not ferment; the germs do not develop spontaneously in the can. So you can no more spontaneously generate hog cholera than you can the hog that has it. If all the germs of scarlet fever could be destroyed to-night scarlet fever would be known only in history.

Before you there hangs a diagram* showing the deaths in Michigan in 1880 from those diseases which your state board of health is endeavoring to prevent, showing in the relative order of their danger, consumption, diphtheria, scarlet fever, typhoid fever, smallpox, and every one of these diseases is caused by a living germ.

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*See diagram on page 497.

Some people do not know that

CONSUMPTION IS A COMMUNICABLE DISEASE,

but if you were to go to this biological laboratory, as I suggested, you would find among these test tubes one containing cultures of this rod-shaped germ pictured here,† and if you asked where the original germs were obtained you would be told that they came from the sputa of some consumptive patient. These germs have been found repeatedly in the sputa; they have even been found on the walls of rooms inhabited by consumptives where the sputa had dried upon the floor and the sweepings had carried the germs into the air and to the walls of the room. These germs have even been found in the dried fly-specks on the windows of rooms inhabited by consumptives where the flies had fed upon the sputa. These sputa have been pulverized, sprayed into the air and dogs placed in an inhaling room and compelled to breathe this sputum dust, have contracted the disease and died. When Tappeiner was performing these experiments, a robust servant of forty laughed at the idea that consumption could be communicated in this way, and in spite of all warning he went into the inhaling room, breathed the sputum dust, caught the disease and died in fourteen weeks of consumption.

Now, thousands of citizens of Pennsylvania do every day in the week, unconsciously, just what this man did, consciously and wilfully, and when we think of the tens of thousands of citizens of Pennsylvania who, every day in the week, are expectorating on the floors of our public buildings, our post offices and hotels; when we think how these germs are being picked up and carried into the air at every sweeping; when we think of the miscellaneous crowds sleeping in hotel bedrooms; then think of the close, unventilated sleeping car, with hangings so well calculated to catch the germs, and where, as someone has said, the air is often as bad as in those boxes where dogs are placed for purposes of experiment, and then when we remember that man's lungs are a regular hothouse for the growth and multiplication of these germs, is it any wonder that ten thousand citizens of Pennsylvania every year yield up their lives to this great white plague?

Now, my friends, the object of my remarks is not to make you afraid to breathe. It is quite likely that what I have said may sound like King Richard's cheerful request, "Let's talk of worms, of graves and epitaphs." I suppose there is such a thing as dwelling on the dangers that surround us until we become morbid, like the Irishman who used to stand each day before a mirror and shut his eyes to see how he would look when he was dead. It made him melancholy. You know Mr. Talmage says that a great many people kill themselves worrying about sickness and about dying. He says they bother about their digestion until the stomach finally gets tired of being suspected so much, and says: "Hereafter make way with your own lobsters," and the mistrusted lungs resign their office, saying: "Hereafter blow your own bellows."

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†See diagram on page 495.

But if we talk about these invisible enemies in the air we breathe, it is because we now know their military tactics and how to destroy them, and why should we cry "Peace! peace! when there is no peace?" If this is an average Pennsylvania audience, one person in every seven here to-night will die from this disease, and this is true, with slight variation, over the civilized world. There are less deaths from consumption in Montgomery county than in other parts of your state, but forty citizens of Norrsitown will die each year from this disease. Yes; during the hour that I will stand upon this platform some citizen of Pennsylvania—some seventeen men and women in the United States, men and women filled with happy, hopeful dreams—men and women to whom life is joy, will surrender their lives to this great white plague. And yet, if

THE RECOMMENDATIONS OF YOUR STATE BOARD OF HEALTH

were universally carried out, not one of those cases need occur.

What are those recommendations? Is it necessary to shut up the consumptive—keep him from his family and friends? No; because the germs of the disease are not found in the breath. Bolinger caused a consumptive to breathe on a surface covered with glycerine, and he caught no germs. Grancher caused a consumptive to breathe two hours a day for many days in an air-tight rubber bag filled with guinea pigs, and the guinea pigs did not contract the disease. The main danger is in the dried sputa fom the consumptive.

Now, your state board of health has recently issued a circular—would that it had the money to place that circular in the hands of every citizen of this state—telling how to destroy the sputa. I have not time to-night to give those rules; but suffice it to say that your state board recommends that in every instance the sputa from the consumptive should be disinfected or burned, and if that simple precaution were universally carried out, you might prevent consumption in Pennsylvania just as easily as you can stop your fruit fermenting by destroying the germs of fermentation in the can.

These other rod-shaped germs* which cause are found not in the sputa, but in the dejections from the typhoid patient. Thus finding their way from a vault to some well, as described this afternoon, some neighbor drinks the sparkling water and with it the germs of disease and death. If you are drinking water from a well situated thirty or forty feet, or fifty or sixty feet from a neighbor's vault, you may be tolerably sure what you are drinking. You know Artemus Ward used to say that when he went to a hotel he always ordered hash—then he knew what he was getting. Still, you say you have been drinking bad water all your life, and you never yet died of typhoid fever. This may be true. You may drink water from a well located only a few feet or rods from a neighbors's vault, and every time you drink from the well you may drain the vault, and you may keep this up for fifty years if you enjoy that sort of thing, and never get typhoid fever because the specific germ has never found its way into that vault, but the magazine is ready for the spark. Some day the germs of typhoid fever may find their way into that vault, and then you will drink not only filthy water, but the germs of typhoid fever as well.

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*See diagram on page 495.

These germs have been found in the water used by typhoid patients, and injected in dogs have caused the symptoms of typhoid in those animals.

Your state board of health has issued a circular telling how to disinfect the discharges, and if your legislature would give your state board the machinery for which it is pleading, if there were in every city, borough and township in the state a local health officer who had taken a solemn oath to carry out these recommendations of your state board, typhoid fever might be, like smallpox, practically a disease of the past.

Not yet having the machinery, your state board places a practical remedy in the hands of every man—that is, it recommends the boiling of drinking water, because boiling the water will destroy the germs of typhoid fever just as boiling your fruit will destroy the germs of fermentation. Let me emphasize this recommendation of your state board to the people of Norristown. Boil the water you drink at the time of year when typhoid fever is expected; boil it if you have any doubt about the purity of the water you drink; indeed, if you drink Schuylkill water you might boil it all the time. It is perfectly practicable to have always on hand a supply of cold boiled water; then, too, it is more civilized.

Civilized man cooks his food. The Australian puts a stick down into an ant hill, puts his mouth over the hole, lets the ants crawl up into his mouth and makes a very good dinner, but civilized man cooks his food. Still, civilized as we are, we insist on taking our water as Mr. Quilp took his whiskey—raw.

In this respect we are even behind the people of China—China where dog meat costs more than mutton and rats sell for ten cents a dozen! Yet in China, though they have a filthy water supply, though they live in boats along rivers from which they derive their water supply and into wihch they empty their sewage, yet they do not have those diseases spread by contaminated water supply because they always boil the water they drink and would no more take it uncooked than they would eat uncooked potatoes.

The other two diseases which your state board is making active efforts to prevent are

DIPHTHERIA AND SCARLET FEVER.

You will notice that no germs are pictured here as the cause of these diseases, because it is not yet known just what germs cause them, but there is no doubt that they are caused by some living germ. Indeed, during the past year there has been new evidence going to show that the so-called Löffler bacillus is the true cause of diphtheria. Six years ago Dr. Löffler found in the false membrane of those sick with diphtheria, a bacillus which, cultivated and injected in rabbits, produced diphtheria in those animals, the germs being found on post-mortem examination. Three years ago, in ten recently examined cases, he again found this germ. Two years ago Roux and Yersin made similar successful inoculation experiments; one year ago Kolisko and Paltauf found the bacillus of Löffler in a large number of cases of diphtheria and croup, from which they inferred, what many physicians have long believed, that there is a relation between the two diseases, and that croup may give rise to diphtheria. Only recently three different observers have made a bacteriological study of some cases of diphtheria in the Netherlands in which they found the Löffler bacillus which in cultures was fatal to rabbits in five or six days. And yet so cautious are sanitarians that they are not yet quite ready to accept the Löffler bacillus as the cause of this disease.

There is no doubt, however, that diphtheria is caused by some living germ. Three or four months ago word flashed across the wire telling of forty-nine cases of diphtheria and sixteen deaths in the little town of Zanesville, Ohio, and then the story was told how a little girl had died of diphtheria in Chicago, her body had been carried home, friends had gathered at the house to sympathize with the parents, the coffin was opened that the little children might take a last view of their little playmate, and in a week the brother and sister of the little girl followed her to the grave. In a family living only a block away four children were taken sick the same day; two days later two of them died and the other two soon followed. The broken-hearted mother contracted the disease and followed her children to the grave; the father returned from the legislature and now sleeps in the same vault with his wife and children.

So it is not definitely known just what germ causes scarlet fever, and yet every day in the week cases occur in your state where the germs have been carried in the hair or clothing, where they have lingered in the carpet on the floor or the paper on the wall, where they have been carried a long distance by letter or have found a hiding place in the rubbish of the garret, as vigorous and vicious to-day as when they first emanated from the body of the infected person.

WHAT IS YOUR STATE BOARD DOING TO PREVENT THESE DISEASES?

As Pasteur, by isolating the sick worms from the well, was able to save the worms, so your state board proposes to isolate every person in the state sick with diphtheria or scarlet fever, and then after death or recovery to thoroughly disinfect to destroy the germs of disease lingering in the room.

Just how many lives have been saved in Pennsylvania by those health officers who have followed these recommendations of your state board I am unable to say, but I am better acquainted with the work in Michigan, where the facts have been collected, and as the recommendations there are similar to those in this state the facts apply here as well as there. There every health officer is required by law to report at once every case of a dangerous communicable disease, and they have learned that all doubtful cases must be reported, because, as we have seen, croup may turn out to be diphtheria, typho-malarial fever may turn out typhoid, scarlet fever may have been called German measles, and it is better to run on a false alarm than to miss a fire.

On the receipt of this information the state board at once confers with the local health officer, telling him what to do and requiring regular weekly reports and then a final report after the outbreak is over. In this final report the health officer is required to state whether or not he isolated those sick with the disease and disinfected with the fumes of burning sulphur, as the state board requires. He is also obliged to state just how much sulphur he used.

I am aware that some sanitarians put little faith in sulphur disinfection, basing their opinion on laboratory experiments by Koch with the anthrax bacilli containing spores which are very difficult to destroy, but it seems to me that the statistics which I am about to present prove beyond question that the fumes of sulphur will destroy the germs of scarlet fever and diphtheria.

Statistics! Possibly you sometimes hear it said that state boards of health are simply bureaus for gathering statistics, and some people see no use in statistics. When Faraday was asked "What is the use of statistics?"he answered, "What is the use of babies" Within them are all the possibilities of future blessings. Now when a health officer reports to the state board of health that he did not isolate patients sick with diphtheria, that he did not dinsinfect premises, and that he had fifteen cases of the disease and three deaths, that is a statistic (if I may use that word); when another health officer reports that he did disinfect, and that he did isolate patients, and that he had only two cases and no deaths, that is a statistic. But when thousands of health officers make similar reports, they are statistics, but they are still all rubbish until some use is made of them—all in the dark—all in the clouds. But when these facts are placed side by side as in the diagram before you*, and when it is seen that universally where these precautions were not taken there were five times as many cases and five times as many deaths as in those outbreaks where these precautions were carried out to the letter, that is the compilation of statistics: that is where the lightning flashes from the clouds. These facts have been collected for both diphtheria and scarlet fever and for three years running and, though only one year is represented in the diagram which I present*, facts covering three years, over five hunderd outbreaks of diphtheria, over forty-three hundred cases and over nine hundred deaths show a similar result.

Now, just so surely as Pasteur could predict that those worms which ate the infected meal would sicken and die while others would not, so

WE CAN PREDICT THAT WHERE HEALTH OFFICERS NEGLECT THESE PRECAUTIONS

there will be five times as many cases and five times as many deaths as where they obey the instructions of the state board*, and in this way we are able to prove that thousands of lives have been saved by those health officers of Michigan and Pennsylvania who have isolated patients sick with these two diseases, and after death or recovery have disinfected with the fumes of burning sulphur to destroy the germs. Sulphur has long been a good orthodox disinfectant for the next world; we now know that it kills the little devils in this.

You know it was an old idea that disease was caused by the possession of devils, and that the way to cure disease was to cast these evil spirits out. Our forefathers used to prick the affected part in the hopes of thus letting the evil spirit out, in much the same way that the Indian medicine men now gather about a patient, one playing the tom-tom to scare the devil out, one pronouncing an incantation to charm the devil out, another jumping on the patient's stomach to stamp the devil out. If the devil doesn't kill the patient the doctor usually does. Now, communicable diseases are caused by the possession of evil spirits, these germs; but these little devils, strange as it may sound, cannot live where sulphur is burning.

The one thing which hinders your state board of health in the restriction of these diseases is the failure of the legislature to give it sufficient machinery.

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* See diagram on page 496.

WHAT MACHINERY DO YOU NEED?

You have a local township school system, why should you not have a township health system? At least fourteen different states have such a system; there is such a system in the state where I live. There the common council of every city, the common council of every village, the board of supervisors of every township is the board of health by law, and as such is required to constantly have a well-educated doctor as health officer, and to report his name to the state board of health. Last year nine-tenths of the fifteen hundred localities in the state complied with this law.

More than that—every physician is required by law to report at once to the local health officer every case of a dangerous communicable disease in his practice, and he is fined if he fails. Every householder is required to report at once to the health officer every case of a dangerous communicable disease in his house, and he is fined if he fails. If he fails to pay the fine he is liable to imprisonment in the county jail.

The health officer is required to report at once to the state board of health, to isolate every case, to placard houses, to personally disinfect after death or recovery, and if he fails in any of these things he is liable to fine and imprisonment in the county jail.

More than this, any person who tears down the placard or in any way violates the orders of the health officer is liable to fine and imprisonment in the county jail.

Now, there may seem to be a good deal of "county jail" about this, but the time has come for people to understand that it is a misdemeanor—aye, a crime, for a man sick with communicable disease to expose a neighbor and kill him. We very properly boast in this country of our Saxon independence, and cry out against so called sumptuary laws which needlessly interfere with personal liberty. The time was when nearly everything was regulated by law. In the old Massachusetts colony a law was passed requiring the sleeves of all dresses to reach to the wrist and prohibiting anyone worth less than two hundred pounds wearing lace which cost more than two shillings a yard. Men who wore long hair were liable to imprisonment. I saw not long ago in the *Central Law Journal* a copy of a law still on the statute books of New Jersey, passed when that state was a British colony, which reads: "All women of whatever age, rank, profession or degree, whether maids or widows, who shall, after this act, impose upon, seduce and betray into matrimony any of the King's subjects by virtue of scents, cosmetics, washes, paints, artificial teeth, false hair, or high-heeled shoes, shall incur the penalty of the law now in force against witch-craft and like misdemeanors."

All of this is sumptuary law—a needless interference with individual liberty. Government has no right to interfere with the liberty of one man except where that man interferes with another's rights, but if it

ALL MEN HAVE AN EQUAL AND INALIENABLE RIGHT TO LIFE AND LIBERTY,

is the business of the state to maintain that right, and no man has any more right to go upon the street and infect you with the germs of disease so that you sicken and die than he has some dark night to knock you on the head, and the government which punishes the one offense should punish the other.

The law makes it the duty of your state board at such times as this to suggest to the legislature certain necessary amendments. It seems to me that the one necessity in Pennsylvania—a necessity which overtowers all others—a necessity on which depends the lives of thousands of citizens, is the compulsory establishment of a local board of health and local health officers in every city, borough and township in the state. It is absurd to expect that your state board can restrict every outbreak of a dangerous disease in your state without this

NETWORK OF LOCAL BOARDS.

You need a general at headquarters to keep track of the enemy, but you need in every locality a soldier. You have such a general in your able and tireless secretary, Dr. Benjamin Lee, but he cannot placard every house in the state where there is a dangerous disease. This is properly the work of the local board. Your state board can furnish the inspiration—the steam—but you must have the machinery. The cities of Pennsylvania *may* establish a local board of health, *may* appoint a health officer, *may* make all needful regulations to preserve the public health, but your legislature should make

A UNIFORM SYSTEM COMPULSORY

and should make it apply to the boroughs and townships. Your state board has sent all over the state circulars urging the importance of these boards, but it needs a cracker on its whip, that it may say, not you can, but you must. If there were in every locality in this state a health officer who had taken a solemn oath that he would carry out the instructions of your state board, that he would isloate patients sick with scarlet fever, that he would thoroughly disinfect, you might stamp out scarlet fever and diphtheria in Pennsylvania just as easily as Pasteur stamped out the silk-worm plague in France

Now, can it be that anyone will still inquire, in spite of all these facts,

DOES HEALTH WORK PAY?

If France could afford to spend thousands of dollars to save its worms, as I said at the start, it is simply a question whether men are worth as much to the state as worms. If your state board could save these lives and prevent this sickness, how much money would it save the state? I know it is almost absurd even to ask the question, for even savages admit that every life has a money value to the community. Two or three years ago a ranchman in San Juan county, New Mexico, killed an Indian, and the Indians at once demanded ten head of horses, or $200 in money as the value of the dead buck. They sent their squaws back into the interior and threatened to kill every white settler on the San Juan river if the money was not paid to the widow of the dead Indian. There was a squaw who would not lose her husband for a cent less than $200.

Our Teutonic fathers intrdouced a similar custom into England. They hardly regarded murder as a crime, but they did realize that every life had a money value to the community, and so everyone who took another's life was fined. The fine was paid in part to the widow and in part to the tribe, and this fine was intended to represent the value of the dead man to the community. Thus it cost little to murder a slave, more to murder an artisan, while taking the life of an English baron came very expensive.

So to-day there is on the statute books of most states a law providing damages for the wrongful taking of a human life whether by negligence or feloniously. The maximum is fixed in most states at $5,000, and the minimum at $1,000. Now, I know this sounds almost like sacrilege; it sounds almost like sacrilege to put the pound of sacred flesh in the same balance with the three thousand ducats. But it is a fact whether we consider man as the law considers him; whether we sit down, as did William Farr, with a life table in our hands and calculate the future annual earnings of a man at a given age, subtract his future cost of living and take the capitalized remainder as the value of the man; whether we say, as some have said, that every man is worth to the community what it will cost to train up from infancy another just like him, or whether we remember in a common sense sort of a way that in the slave markets of the South a man sold for a thousand dollars—the fact remains that every man who is not sick or a vagrant will give the world more than he will take from it. No man ever yet lived and labored but the world was richer because he lived and labored, and every death tends to bankrupt the nation.

More than that, every time one dies a dozen are sick, and

SICKNESS IN A COMMUNITY IS A FINANCIAL PANIC.

Do you doubt it? Reflect that when you are sick you spend at least fifty cents a day for medical attendance; that you spend at least as much for nurses; that when you are sick you lose your wages. Now, we have learned tonight that over one-third of all the deaths which occur in Pennsylvania each year might be prevented. Ten thousand deaths each year from consumption! 6,000 from diphtheria! 3,000 or 4,000 from scarlet fever! 2,000 or 3,000 from typhoid fever. Over 20,000 preventable deaths! Over 200,000 cases of preventable sickness! Then calculate for yourself what a panic it is to have these diseases in your midst!

The amount of money which sickness costs your state is too great to be grasped even by the imagination. If you doubt it reflect that there are 8,000 doctors in Pennsylvania. I suppose that they make on an average $1,000 each. That is $8,000,000 which you pay to cure you after you get sick. Now, we would hardly agree with Dr. Holmes when he said that humanity would be infinitely better off if all the medicine were thrown into the sea, but it would be awful for the fish. And Lowell exaggerated some when he said that among doctors there were hydropaths, homœopaths and allopaths who agree in nothing except that the other fellow's path leads to the grave. No matter how much we may abuse the doctors, we are always ready to go to them when we get sick, and I do believe that nowhere is there to be found greater devotion to humanity than in the medical profession. They are ready to go at all hours of the day and night; they know that doctors die younger than those in any other profession, because of the great exposure to communicable diseases, and yet they are willing to face not only personal discomfort but danger as well to allay pain. But my point is this: How much better it would be to salary these doctors to keep us well and then dock them their pay when we get sick—give them a money interest in keeping us well rather than sick.

How do you do that in Norristown? You have here about thirty physicians—that is, you pay $30,000 to cure you after you get sick — and yet you pay your health officer only $200 (I believe) to prevent your getting sick. Now, prevention is better than cure. It is all right to pay these doctors to battle with these germs of disease after they enter our bodies, but you should pay one man at least $1,000 a year to spend his entire time destroying these germs before they begin to destroy us. You have heard of the Irishman who swallowed a potato bug, and then swallowed Paris green to kill it. It is better to kill these germs before they enter our bodies—it is healthier and it is cheaper; and yet we, who pay so much to cure disease, would probably grumble at a tax of five cents apiece to prevent disease. Some people seem to think that because they always have lived, all money spent to prevent disease and dying is money wasted. You have heard of the man who dropped his life insurance because he had kept the thing up twenty years, and never derived any benefit from it yet. That seems too often to be the policy of the city, the state, the nation.

While every second-rate power in Europe has its national board of health, ours has none. In 1887

CONGRESS APPROPRIATED $500,000

for the investigation of tuberculosis in cattle and of hog cholera—more, I believe, than it has ever appropriated for the prevention of diseases in man. New York state appropriated $105,000 more, Virginia $75,000; and yet, from the mere financial standpoint, all the cattle and hogs in the United States are not worth so much as the lives sacrificed each year in Pennsylvania to diseases which we might prevent.

Four years ago Edwin Chadwick, commenting on an appropriation of the Spanish legislature for equipping war vessels, showed that the same amount of money expended in sanitary improvements would, in ten years, save over two hundred thousand lives and prevent two million cases of sickness. Such an appropriation would be laughed at, and yet Spain lost more lives during the last cholera epidemic than during the great Peninsular war. In the Crimean war 20,000 French soldiers died in battle, 75,000 died of disease. During our own late war disease carried off many times more than the fields of battle and the wounds of battle. And yet a nation which pays thousands of dollars to maintain a large standing army to protect us against foreign foes, with whom we ought to be at peace—a nation that spends thousands of dollars to study the diseases of peaches and pears, thousands of dollars to protect its fish and the young seals of Alaska, has done practically nothing for the prevention of diseases in man.

I have not time to continue this subject further, but no more important question was ever presented to any civilized audience in any civilized age. There is hardly a person here to-night who has not stood by the grave of some loved one whose death might have been prevented—one to whom death came, as the poet said,

> "Like some untimely frost upon the sweetest flower in all the field."

If there are five hundred here to-night at the average age of forty-five years,

WE REPRESENT FIVE HUNDRED OTHERS,

who, forty-five years ago, started out with us on life's highway, and who have since joined the "Great Majority." One hundred and fifty dropped by the wayside during the first year of life; at the close of five years three hundred were gone. We strewed the path with flowers and journeyed on. At 45 only one-half of the original band are here, and at 95 years of age only two of the original thousand are left to stagger to the grave. And yet if we prevented those diseases which we now know how to prevent, the average life of man would be 100 years.

Two of the original thousand will die from smallpox, thirty from typhoid fever, thirty-five from scarlet fever, eighty-five from diphtheria, one hundred and thirty from consumption—over three hundred* from diseases which we now know how to prevent.†

Do you remember Joseph Addison's "Vision of Mirza," where he tells how he was summoned to the mountain top, and there listened to the wonderful music of the "Genius of the Rocks?"

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* Including measles, whooping cough, etc.

† See diagram on page 496.

Cast thine eyes eastward, said the Genius, when he had finished playing, and tell me what thou seest.

I see, he answered, a prodigious valley, and through that valley a great tide flowing.

The tide thou seest, O Mirza, is part of the great tide of eternity; but look again, and tell me what thou seest now.

And Mirza answered:

I see an immense bridge, which "from a cloud emerges and on shadow rests."

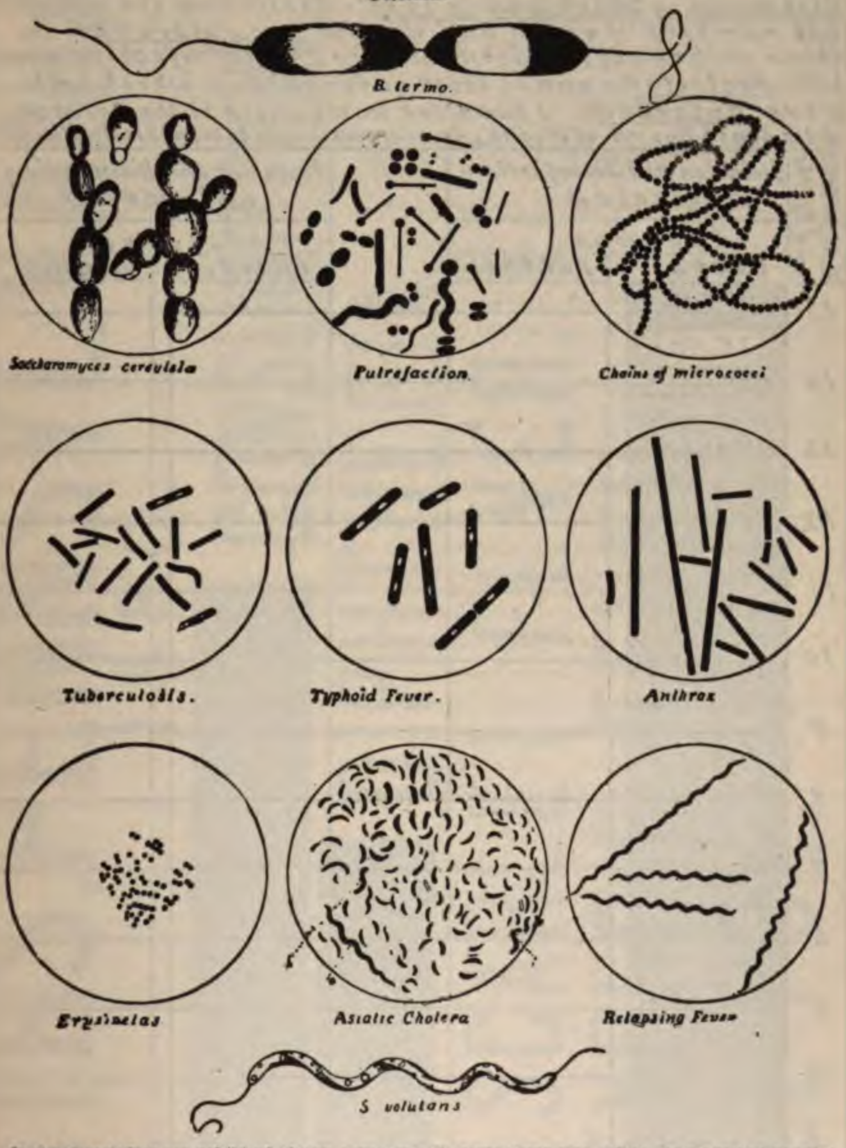
The bridge, thou seest, O Mirza, is human life.

And on this "narrow bridge 'twixt gleam and gloom" they watched the long procession of humanity hastening onward.

Come closer, said the Genius of the Rocks, and, following where he beckoned, Mirza saw that the bridge was composed of three score and ten arches—some broken, some complete. He looked again, and saw that in the bridge there were innumerable trap-doors, through which the passengers, long before they reached the last arch, dropped into the great tide beneath—"the dark and unknown sea which rolls round all the world." Some, while pursuing "glittering bubbles," others "with eyes toward heaven in thoughtful posture," slipped and fell, while it was very few indeed who survived the long and painful journey and hobbled at last under the last arch.

For the pitfalls and trap-doors in life we are responsible. Prevent these diseases, and the natural span of life will be one hundred arches, not three score and ten! Prevent these diseases, and the way will be not a "bridge of sighs," not a rack of pain, but a golden span, on which we journey safely to the unknown shore.

GERMS.



B. termo.

Saccharomyces cerevisiæ

Putrefaction.

Chains of micrococci

Tuberculosis.

Typhoid Fever.

Anthrax

Erysipelas

Asiatic Cholera

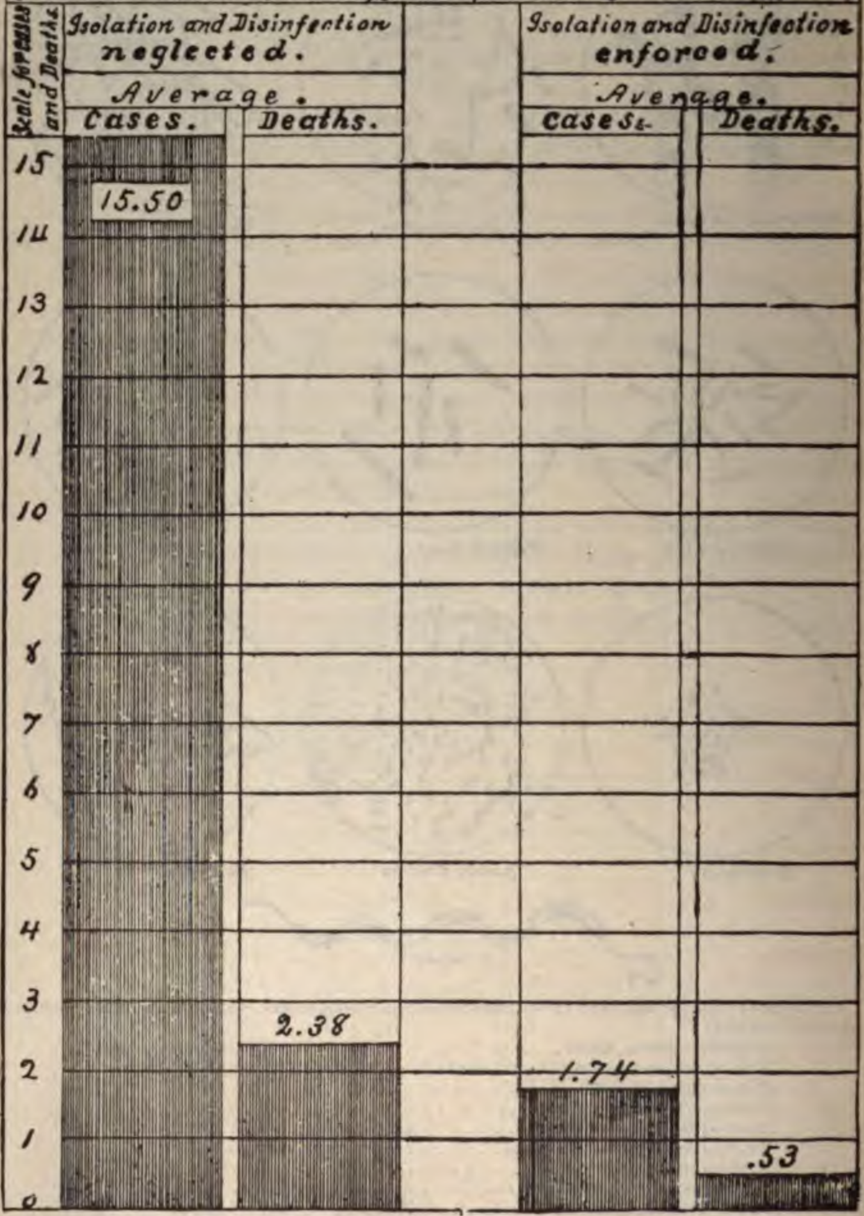
Relapsing Fever

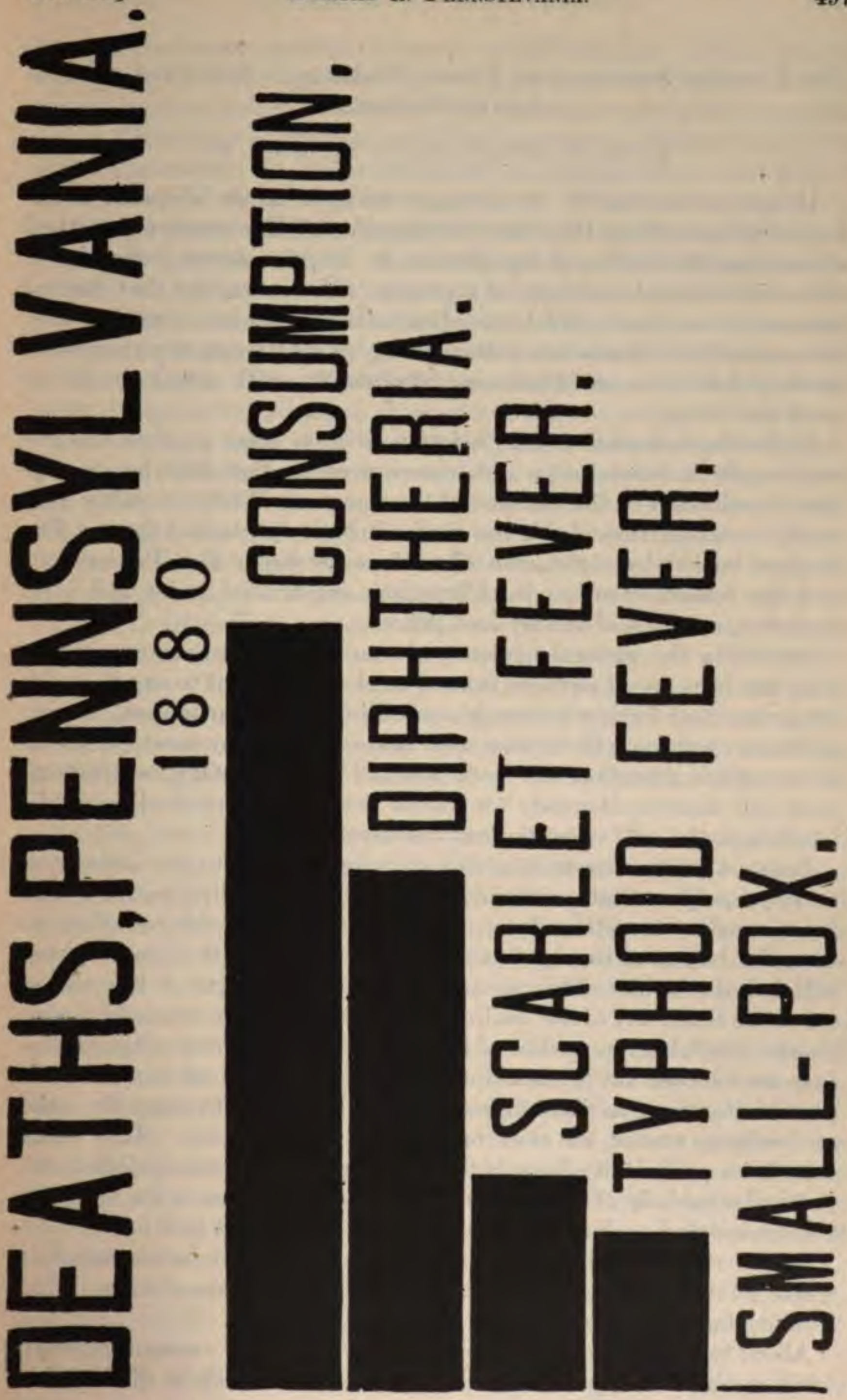
S. volutans

In the above plate are exhibited eleven specimens of micro-organisms, which are magnified approximately as follows:

Bacterium Termo, about	1200 diameters.
Saccharomyces Cerevisiæ (Yeast), about	500 "
Putrefaction (Bacteria), about	1200 "
Chains of Micrococci, about	1400 "
Tuberculosis (Bacillus), about	1100 "
Typhoid Fever (Bacillus), about	1100 "
Anthrax (Bacillus), about	1400 "
Erysipelas (Micrococci), about	1300 "
Asiatic Cholera, about	800 "
Relapsing Fever (Spirillum), about	1300 "
Spirillum Volutans, about	500 "

Diphtheria in Michigan in 1888:- Exhibiting the average numbers of cases and deaths per outbreak,- in those outbreaks in which Isolation and Disinfection were both Neglected; and in those outbreaks in which both were Enforced. (Compiled in the office of the Secretary of the State Board of Health, from reports made by local health officers.)




DEATHS, PENNSYLVANIA.
1880
CONSUMPTION.
DIPHTHERIA.
SCARLET FEVER.
TYPHOID FEVER.
SMALL-POX.

THE DANGERS ARISING FROM PUBLIC FUNERALS IN THE CASE OF CONTAGIOUS DISEASES.

By REV. S. BRIDENBAUGH, *of Norristown, Pa.*

Deeply interesting to the living must ever be the disposal of the bodies of those whom they have loved and lost. The manner or method of treating the bodies of the dead is, in large measure, indicative of the condition and character of a people. Hence we find that funeral customs have always varied according to time and place, and that they have associated themselves with a variety of sentiments the expression of which has been attended, not infrequently, with actual cruelty toward the living.

Under the influence of the Christian religion some marked changes were made in funeral rites and observances, so that they became the direct antitheses to the customs of the Pagans. While the latter generally cremated their dead, the Christians always buried them. The Pagans buried by night: the Christians by day. The Pagans carried the funeral cypress; the Christians substituted palm and olive branches, symbols of victory and peace.

But while the general tendency of mankind regarding funeral customs has been one of advance, it must be clearly evident to any thoughtful person that further reform is needed in certain particulars, the importance of which will be seen and acknowledged by most people so soon as their attention has been directed thereto. Of these customs none call more vociferously for reform than that of conducting public funerals in the case of contagious diseases.

Before a convention such as this, it is unnecessary to cite authorities to convince you that contagious diseases, such as diphtheria, scarlet fever, small-pox, yellow fever, may be communicated by exhalations from the bodies of the dead as well as by contact with living persons afflicted therewith. This we assume on the strength of the almost universal testimony of the medical profession. We are assured by physicians that wherever bodies of those having died from contagious disease are exposed the germs of such disease are present, and that it is possible for these to find lodgment in the furniture of rooms, the walls of dwellings and in the clothing of those in attendance. This being so, what a probability there is that any one present, susceptible to the particular malady of which the person has died, may fall a victim to the disease and perhaps aid innocently in carrying it to others.

Such occurrences have, indeed, been very frequent in communities where public funerals have been permitted in the case of those dying from contagious diseases.

About twelve years ago, while pastor in a town of western Pennsylvania, malignant diphtheria became epidemic. A child died of this disease in a house opposite the public school building. Burial did not take place until the third day after the occurrence of death. During a considerable portion of that time the remains were exposed to public gaze. More than a hundred pupils of the school availed themselves of the opportunity to linger around the corpse and take a last look at the remains of their departed schoolmate. The disease spread. In the town and surrounding country at least one hundred and fifty persons were infected with it About forty died. This will not be surprising when I assure you that all the funerals were public. Whether held in the house or in the church in most instances crowds thronged to view the remains and aid in spreading the disease. There was no board of health, and a majority of the people were doubtless unaware of the danger to the living in their efforts to show respect for the dead.

Not very long ago a child died of diphtheria in Ravenwood, Illinois. The body was removed to a town in Ohio, where sympathizing friends and others "viewed the remains." As a result an epidemic of diphtheria broke out and many deaths occurred in consequence thereof. On the 22d of last month a well authenticated report from St Paul, Minnesota, said: "Malignant diphtheria is epidemic in the village of Vining, in Otter Tail county. The village has a population of about one hundred and fifty persons, nine-tenths of whom are afflicted with the disease. There have been twenty deaths since April first, and thirty altogether. Instead of adopting measures to check the contagion the people, mostly Scandinavians,are seemingly doing everything possible to spread it. The funerals of all the victims have been public and largely attended."

In *The Annals of Hygiene* for November, 1888, I find recorded this incident: "An adult person died of diphtheria. The corpse was taken a few miles distant to the home of a relative. The coffin was opened, and the body exposed to the view of relatives and friends. In a few days there was a severe outbreak of the same disease among the inmates of that home. There had been previously no case of diphtheria in that village."

Before the thirteenth annual meeting of the American Public Health Association, Dr. Stewart, health commissioner of the city of Baltimore, said: "I know that in an epidemic of small-pox that occurred in Baltimore two or three years ago, the great start the disease obtained was from a public funeral which took place in a church. Five or six hundred people were present. In that locality within two or three weeks the disease was dotted around in four or five houses, and hundreds of cases came from that one cause."

We could multiply instances of like infection and fatal results arising from public funerals in the case of contagious diseases. But let these suffice.

Knowing the fact that infection does occur by persons coming within reach of the germs exhaled from the bodies of those having died of diseases such as we have mentioned, what is our duty with reference to the obsequies in connection with the burial of these departed ones? Clearly, it would seem, to discourage in every feasible way the holding of public services over the bodies either in the home or the church.

In instances of this kind three persons are invested with a special responsibility--the physician, clergyman and the undertaker. To evade this responsibility, and neglect to dissuade, if possible, sorrowing friends from having public funeral rites is to manifest a lack of proper regard for the welfare of the living. I know the difficulty that will confront us. There is, it would seem, planted deep in the human breast a desire to honor the dead. And, unfortunately, there are those who think that honor can best be shown by a public funeral pageant. Whatever is said to bereaved relatives at such a time, therefore, must be spoken with the utmost gentleness. But they should be instructed as to the duty of subordinating their wish to honor the dead to the important matter of preserving the health of the living. Let surviving friends be assured that whilst we esteem the sentiment which prompts them to testify their respect to the memory of the departed by public funeral services, we do not regard the omission of such services, when required by the public good, as resulting in any detriment to the dead, either in the way of dishonor to the body or injury to the spirit.

Whenever the public health requires it, let the burial be private: yea, if the safety of the living can be the better assured thereby, let the night season be chosen wherein gently to lay away in the bosom of the earth the body of the departed.

This need not, in any sense, prevent the living from showing all respect and honor to the memory of the dead; for, if desired, at some later time, when there is no longer risk or danger of contagion, relatives and friends can meet together in the home or sanctuary and there engage in fitting services.

Certainly it must be considered very thoughtless, if not selfish, for the members of one household to insist that persons from many other homes shall be subjected to the danger of infection and consequently of being lost to those near and dear to them in order that a public funeral service may be held over the unconscious remains of one who can neither be benefited by it, nor injured by the omission of it. And most persons, we believe, will readily yield in this matter if properly advised. But, if any are unreasonable and insist upon public funeral rites with an apparent disregard of the health of others, and the fearful sacrifice of human life that may result, it becomes the duty of the proper authorities to call to their aid the strong arm of the law. If rendered necessary, the police power should be invoked to teach such persons that it is a high moral duty to forego their personal preference and to sacrifice their individual liberty that the welfare of the community may be conserved. In instances of this kind the board of health should take possession of the house when death occurs; direct when and how the burial shall take place; destroy clothing and other articles that have been in contact with the patient; disinfect the house and the corpse and take every necessary precaution for preventing further infection.

Fortunately, in this commonwealth, legislation has been such as to endow councils of cities and boroughs with all the powers needed for the protection of the health of their respective localities. But, as we all know, such laws depend, in great measure, for their enforcement upon public opinion and the sentiment of the particular community. Hence the great importance of such education as this state board of health is seeking to give. These efforts of your board should be supplemented by proper teaching on the part of the church, to which the affair of funerals has been almost entirely delegated. Ministers can do much in the way of explaining to people how it is possible to manifest proper respect for the dead without disregard of the living.

The following words of John Ruskin, the celebrated English writer and critic, contain a truth that is worth pondering: "Our respect for the dead, when they are *just* dead, is something wonderful, and the way we show it more wonderful still. We show it with black feathers and black horses; we show it with black dresses and black heraldries; we show it with costly obelisks and sculptured sorrow. * * * This feeling is common to the poor as well as the rich; and we all know how many a poor family will nearly ruin themselves to testify their respect for some member of it in his coffin, whom they never much cared for when he was out of it; and how often it happens that a poor old woman will starve herself to death in order that she may be respectably buried."

To the members of my own profession I would say that, as a rule, brevity should characterize funeral services. The customary funeral discourse we have come to regard as of doubtful benefit. After reading that sublime discourse of St. Paul contained in the fifteenth chapter of I Corinthians, it is hardly possible for the minister to say much more of importance upon the hope of immortality.

And it would be well for all if we could "quit our habit of thinking that what we say of the dead is of more weight than what we say of the living. The dead either know nothing, or know enough to despise both us and our insults or adulation."

SANITARY DEFECTS IN MANUFACTURING ESTABLISHMENTS.

By H. A. ARNOLD, M. D., *of Ardmore, Pa.*

The especial object of this paper is the consideration of those questions of heating, ventilating and disposing of the dust which so greatly concern the health of operatives in manufactories where cotton, jute, wool, camel's hair and shoddy form the basis of materials used.

Much time and thought have been given to the evolution of the best methods of heating and ventilating public halls, school buildings and churches. Truly a laudable work, and with the steady advances wrought out by painstaking and intelligent research in this particular, much good has been done. But when we consider that neither church, hall nor school building are often occupied for more than three or four hours consecutively, and but rarely for six days out of the seven, we can readily understand that the temporary occupants of such places cannot long be exposed to noxious gases or injurious temperatures.

Seeing, then, the provision made for a maintenance of health during hours of study, recreation and devotion, it does not require any great stretch of the imagination to elicit the inquiry, What provision is being made for hours of labor of those who are compelled to occupy the same apartments for days and hours continuously?

The laws of acoustics demand high ceilings for public halls and church edifices, thereby furnishing a larger volume of air, and the almost constant ingress and egress assist in furinshing a change of air. Neither of these measures is available for the relief of the factory operative, who spends, on an average, ten hours each day in a close confining atmosphere.

The relative healthfulness of different occupations has been a matter of consideration and conjecture—especially conjecture—and tables giving the longevity of individuals following the different pursuits of life are so frequently published in the various health journals, magazines and newspapers that it will not be necessary for me to try your patience or consume your time by rehearsing them. We will consider, rather, those defects of management and construction readily apparent to the casual visitor; defects that are as remediable as they are apparent.

A visit to the ordinary factory reveals a rectangular room, with low ceilings and so cluttered up with machinery that, as you pick your way through the whirling maze, the danger of the situation, added to the discomfort arising from the air, superheated and surcharged with atoms of dust, begets a longing for the more salubrious atmosphere outside the buildings.

These defects are more noticeable in old mills using the machinery of a generation ago, and in small establishments, such as shirt and stocking factories, where, from limited capital, small, overcrowded quarters are considered a necessity and sanitary considerations luxuries unthought of and unattainable. The principal defects presenting themselves to me in the course of a self-imposed inspection of a number of manufacturing establishments in this and the adjacent counties of Philadelphia and Delaware, were imperfect methods of heating, ventilating, disposing of dust and failure to provide satisfactory water closet arrangements.

We will consider these defects in the order named.

HEATING.

The system of heating almost universally used at present consists of a number of coils of pipes running along side walls between the windows and the floor. Through these pipes live steam, or what is more generally the case, exhaust steam from the engine is made to pass. As an abundant supply of steam is obtainable, the principal danger lies in overheating. Indeed, so essential is it in certain processes (such as spinning) that a high temperature should be maintained, that a complete check is thus placed upon any marked lowering of temperature. This is not operative, however, in the prevention of overheating, and the temperature may climb up away above the requisite degree, and the feeling of discomfort be scarcely noticed by the busy worker. In many mills storm sashes are made use of as an additional protection against cold. That they are effectual is evidenced by the fact that they are still excluding the cold air from some mills at the time of the writing of this article (May 7th). The only instances of a cold atmosphere menacing the health of employes that have come under my notice, have been at the starting hour in the morning, when, from tardiness or other reasons, the engineer has not been able to spare the steam necessary to properly heat the mill. This defect, which seldom lasts more than a half hour, is worthy of consideration where the employes have a long distance to travel through inclement weather.

VENTILATION.

The question of ventilating is one that has such an intimate relationship to that of heating, that as far as my observation extended, with but few exceptions, the only reason for ventilating was the sense of bodily discomfort arising from overheating. It was not that they loved fresh air more, but hot air less.

An article recently published in one of the Philadelphia papers, in the course of a glowing description of the work rendered by the inspectors appointed under the state law of May 20th, 1889, gives as a result of 720 inspections since January 1st, 1890, a grand total of improvements suggested as follows:

Elevator safeguards	50
Fire escapes	19
Closet changes	19
Belts boxed	24
Hours shortened	7
Better ventilation	1
Total	120

Had I known that the duties of the inspectors extended further than to matters relating to the employment of minors and providing fire escapes, I should have taken up the consideration of this subject very reluctantly.

And had I seen their statement of the uniformly excellent system of ventilating in existence in the various manufacturing establishments throughout this commonwealth, I am sure I would have considered it a work of supererogation to have commenced this paper. I do not stand here to criticise the results of laborers in so good a cause, but I do say that the results of my self-imposed task have led to far different conclusions.

What is designated in each instance in this quasi-official report, as "perfect ventilation," or "first-class ventilation," has, so far as I have gone, proven to be nothing more than the imperfect system of ventilating by raising or lowering a window sash.

In those rooms where the raw materials receive their first attention, the change of air in the room is augmented by the exhausting fans attached to the machinery, the primary object of which is the removal of all dust without its being disseminated throughout the apartment. Even in these rooms the outside air must needs find its way in through open windows or doors. The rooms which give the most flagrant evidence of imperfect ventilation are those where the spinning is done. This is especially the case in cotton mills, where it is necessary to maintain a temperature of 80° to 104° F., according to the degrees of fineness of the thread manufactured. In quite a number of these rooms I found not only every window tightly closed, but also heavy fire doors assisting to hermetically seal the apartment. In one such mill, of three stories, with forty-five windows on the south side, on a warm sunshiny day, four only were opened by partially raising the lower sash.

In maintaining the requisite temperature the thermometer is not referred to, indeed, it is conspicuous by its absence, the sense of bodily comfort, and the facility with which the labor goes on, furnishing the uncertain guide which is blindly followed both as to heating and ventilating.

This system of window ventilation at its best is very imperfect, and being under the control of no one reliable person very seldom receives proper attention. The overheated employe, during a respite from labor, throws up the lower sash, that being the handiest, and a very few minutes suffice to check the prespiration and chill the superheated body. An exceptionally large number of cases of pleurisy have come under my observation, some of which have been directly referable to this cause.

One instance was meet with where the top sashes in a factory of recent construction are stationary, and the only ventlation obtainable is through raising the lower sash and opening the doors at the end of the room.

DUST.

Passing one of our shoddy mills a few evenings since, just at the hour of stopping work for the day, I found it a difficult matter, at a short distance, to determine whether a certain number of the hands were not negroes; and just as I decided that they were all white I saw a genuine negro among them. This extreme change of appearance, giving evidence of the very considerable exposure to the dust and grease by certain laborers in shoddy mills, is well calculated to awaken the inquiry as to its effect upon the health of persons so exposed.

After eight years of observation and experience among these workers, I feel compelled to answer the question negatively.

Theorizing suggested a train of troubles leading from rhinitis, pharyngitis, laryngitis, bronchitis and pneumonia up to degenerative changes and phthisis itself. But theory and practice have not accorded, and I am compelled to state that I have noticed less indication of irritation and inflammation, either acute or chronic, of the respiratory mucous tract among such persons than is commonly present where the only possible irritant inhaled is the dust from the city street or country road.

The only ill effect from this class of work that I have observed is a tendency to erythema and furuncles in certain individuals, who, attributing the trouble to the oil used, designate them "oil boils."

Cotton operatives do not enjoy this same immunity. Throat troubles have been more plentiful, dyspnœa frequently met with and emaciation common. Several cases of commencing phthisis pulmonalis were directly traceable to the constant inhalation of irritant dust and cotton filaments. And yet I am not prepared to agree with an accepted authority (Peterson, of Buffalo, quoted in Report of New Jersey Board of Health, 1886, p. 159), when he says of cotton workers: "They all suffer more or less from bronchitis, dyspnœa, etc;" for a tour of inspection will reveal the fact that it is possible for cotton to go through all its processes of manufacture without the air becoming contaminated or the health of the operative endangered.

In explanation, I would state that different samples of raw cotton vary greatly in the strength of fiber and amount of dirt contained, and that, as a rule, the poorer the cotton, the more antiquated the machinery used for its manufacture. This statement seems to apply more especially to small establishments and very old mills, where the machinery is so far behind the times that they can no longer enter into competition in the manufacture of the finer yarns. It is true the picker house machinery in these mills has fan attachments, but through long use, the amount of work superimposed by reason of the character of the material used, and other reasons, they do their work but imperfectly, and become a menace to the health of the employes.

The lower grades of cotton continue to charge the air with dust and dirt through all the processes of their manufacture. This fact is very forcibly brought to one's notice where the different floors of one large building are used by several firms working different grades of materials. On the first floor of one such building, visited by me, there was a general air of tidiness and carefulness. The cotton was of good quality and contained but little dust; the machinery was modern and in good order, and the exhausting fans attached to willow and picker were run at a high rate of speed and did their work so thoroughly that there was an entire absence of dust.

Ascending a flight of stairs, you find yourself facing a sanitary problem in reality. Entering the picker room, a cloud of dust is seen issuing from the broken front of a machine, which, by reason of this defect, has almost reversed the action of the fan from an exhaust to a blower. In the spinning room the loosely-twisted threads, as they are rapidly twirled, cause all incoherent particles to be forcibly thrown off and received by the air, where they are retained by the revolving machinery until they finally find lodgment. This being a stocking mill, nearly all the yarn is dyed, thus adding an additional element of danger to the unfortunates compelled to breathe it in. Upon leaving this mill particles of dyed cotton could be seen floating in the air for some distance after making their escape from the windows raised for ventilating purposes.

In such mills as these you see pale, thin, anæmic boys and girls, who evidently began this work too early in life, and in whom the struggle for an existence precludes the choice of either hygienic houses or suitable food as an offset for unsanitary labor. A debilitated system, with such surroundings, soon leads to catarrhal conditions and dyspepsia, and eventuates in phthisis. Several persons who have been under my observation for years undoubtedly owe their existence today to the permanent closing of a wretchedly dirty cotton mill. Incipient phthisis had manifested itself and pulmonary hemorrhages were becoming frequent. With an enforced change of occupation came improvement in health and fewer bills for medical attendance.

With a wider application of the present excellent system of disposing of the dust, mortality tables will need considerable revising, and many so-called unhealthy occupations will be robbed of their dangers.

A most flagrant violation of all laws of ventilation was observed by me on the occasion of a visit made to one of the school-slate factories in Northampton county. We approached a low one-story building about twenty feet square, with windows and doors all tightly closed. Before entering, I was told that I would not want to remain in there long. Upon opening the door, I could scarcely see, the air was so thick with flying particles of slate. Seated astride benches arranged around the room as closely as the expeditious handling of the material would permit, were men busily engaged with drawing-knives surfacing and edging the slates in preparation for framing. As they worked rapidly and used soft slate, free from gritty particles, the air was black with the dust which, having absolutely no means of escape, found lodgment upon rafter, ceiling, side walls and window-panes, until a dingy air pervaded the entire room. I asked one of the men if the work was not injurious? He replied: "Oh! no; not at all; but the dust from the machinery of the framemakers is very injurious," alluding to an adjoining room, fully ventilated, in fact, almost open on one side, where the frames are manufactured.

On leaving the building, my friend, an intelligent and observing clergyman, remarked that he "had noticed many cases of consumption among these slate-workers, and that very few men can work at it long without consumption showing itself."

WATER-CLOSETS.

A very few words will enable us to dispose of this subject. Proper regulations in this particular are the exception rather than the rule. In country mills the principal defects consist of wretched construction, failure to empty the vaults until they become an overflowing, offensive nuisance, too great a distance from the mill, too near the supply of drinking water, and an abominable custom of constructing them over running streams, entailing untold evils to dwellers further down the stream.

In town factories, the evils lie principally in imperfect flushing, defective trapping, uncleanliness and want of proper privacy. The importance of this matter is very great, and seems to be fully recognized by the state inspectors.

REMEDIES SUGGESTED.

Now for the conclusion of the matter. Where window ventilation is the only means obtainable, let it be the duty of some person to preserve an equable temperature by frequent reference to reliable thermometers suitably placed about the rooms.

Let the ventilation be secured by lowering the top sash but slightly on the windward side, and further upon the sheltered side of the mill.

Have the room thoroughly aired during the dinner hour, and if possible, provide a separate room, free from dust, where dinner may be eaten by those who cannot get to their homes.

Have the windows, side walls and ceilings regularly and systematically cleaned.

Widen the application of the exhaust fans by applying them to other machinery than that in the picker-room.

The ideal mill of the future will be heated and ventilated by the forcible introduction of air, heated to the required temperature by being passed over steam coils.

Provide sanitary closets, either dry earth or flushing closets, separate and distinct from the mill buildings, and yet within a convenient distance.

And, lastly, provide suitable receptacles for sputum and saliva, which, under present arrangements, find lodgment upon the floor, and when dried, enters the air, and when tuberculous in character, endangers the health of all exposed to its influence.

THE PURIFICATION OF WATER SUPPLIES.

By C. W. CHANCELLOR, M. D., *Secretary of the State Board of Health of Maryland.*

The subject of the purification of water, which I propose to consider in many of its details, is one of very general importance—for, next to atmospheric air, water is the first necessity of living beings.

ANCIENT AND MODERN WATER SUPPLIES.

The skill and taste of the ancients in architecture, and their knowledge of mechanics, are matters of wonder to many of the present age; but the means which they adopted to furnish, irrespective of cost, copious supplies of wholesome water for the purpose of dietetics, health and cleanliness, excite less of surprise than it does of admiration for their wisdom and sagacity in this respect.

Pure water in abundance was regarded by them not only as one of the greatest benefits, but as indispensable to life. In the magnitude of its supply, Rome seems to have surpassed all other ancient cities. During the reign of Nerva, after the Christian era, the aggregate flow of water into the city of Rome is estimated to have been not less than three hundred and fifty millions of gallons. Estimating the city to have contained at that day one million inhabitants, the supply equaled three hundred and fifty gallons per day, per individual. The aqueducts through which the waters were conveyed from various sources, were of the most magnificent and costly construction, and such was their durability that a portion of them, spared by conquering invaders, have survived the destroying hand of time.

The Aqua Claudia, begun by Nero and finished by Claudius, conveyed to the city sixty-four millions of gallons each day. This aqueduct formed a stream of thirty miles in length, and was supported on arcades through the extent of seven miles, and such was the solidity of its construction that it continues to supply the city at this time.

The waters of the river Anio were also conducted to Rome by two different channels; the first was carried through an extent of forty-three miles, and the latter upward of sixty-eight miles, of which six and a half miles formed a continued series of arches, many of them upward of one hundred feet in height. Compared with these, and many similar works of the ancients, the Croton, Cochituate, Fairmount, and Gunpowder waterworks sink into insignificance. The wisdom of the ancient Romans, in the matter of a supply of pure water, is beginning to be appreciated by communities of the present day. That which but a few years since was considered to be a bountiful supply is no longer regarded as such.

In most English towns the water supply is calculated at about thirty or forty gallons for each person daily. In the United States, wherever public waterworks exist, the consumption is much greater, the average American citizen using, or wasting, more than twice as much as his London cousin. Marseilles, the only city of France with a proper water supply, will, when its projected works are completed, be able to furnish an average of 250 gallons per day, per person. Paris, with a population of 2,500,000, had, until recently, only 510,000 cubic metres of water, or about 150 gallons per day, per person, inclusive of water used for all purposes; but works were to have been completed in 1889 which would increase the supply 140,000 cubic metres per day, giving a total supply of 650,000 cubic metres, or nearly 200 gallons per day, per person.

In New York city, with an estimated population of 1,500,000, the daily consumption of water is about 125,000,000, or an average of 83 gallons per person, per day; Philadelphia, estimated population 1,000,000, daily consumption 88,000,000, average 88 gallons; Boston, estimated population 400,000, daily consumption 36,000,000, average 90 gallons; Baltimore, estimated population 500,000, daily consumption 40,000,000, average 80 gallons. The latter city has a maximum daily supply equal to about 500 gallons per person per day, which is probably the largest supply of any city in the world, except the city of Rome, which with a present population of 300,000, has a maximum water supply of 800 gallons per person, per day.

POLLUTION OF WATER COURSES.

Aggregations of population are generally found near some river, or other body of water which serves a double purpose:

1. To supply the population grouped upon it with water for domestic and public purposes.

2. To carry away the town filth, especially sewage matters.

It is with the pollution of water supplies as with diseases--"an ounce of prevention is better than a pound of cure." Many of the customs of mankind, however strongly they be recommended on the score of convenience, are open to objection with regard to their influence upon health; and the common sense of the age has at last arrived at the conclusion that the practice of recklessly polluting water courses must be abandoned, on account of injury which may possibly ensue to the public.

Every hygienic congress that has assembled during the last decade has decided by formal resolution and solemn vote that rivers ought not to be polluted, and that all refuse likely to pollute them must be gotten rid of in some other way than by casting it into water courses; but thus far no practical plan has been set forth by which that which is so plainly desirable can be rendered possible, unless we accept the sanitary paradox, that "all refuse likely to contaminate water courses should be passed through the soil by irrigation."* .

The relative wholesomeness of water is undoubtedly dependent upon the relative amount of certain kinds of organic substances which may be present, and the usual sources of depreciation may be stated as follows:

1. POLLUTION FROM MANUFACTORIES.

Many manufacturing industries yield large quantities of refuse liquid which is injurious by reason of matters either dissolved or held in suspension; but it would plainly be impossible either to require every manufacturer to be an agriculturist, and to hold land upon which his waste liquids might be poured out, or to require every farmer to place upon his land whatever the neighboring manufacturers might choose to send him. As a matter of fact, the suspended matters of most manufacturing industries soon fall to the bottom of the stream, and the dissolved matters are soon oxidized, and, therefore, the English law, so far as manufacturing wastes are concerned, is limited to flagrant cases, or to preventing the discharge of refuse into rivers in situations where a definite mischief would be wrought before any natural process of precipitation could be completed.

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* Sewage farms can only be successful when the porosity of the soil is adapted for filtration and when the area is sufficiently large for the work it has to do; but all sewage before being run upon the land should be treated so that secondary putrefaction cannot be set up, or the organic matter broken up into soluble and, therefore, more hurtful products. This especially is the case where the sewage is undergoing incipient putrefaction. Hence, while the effluent from an irrigation farm may be an excellent effluent, it is obviously unfit for drinking purposes, and should not be sent into a river from which the water supply of any town is drawn.

No doubt the tendency of the times is to carry restrictions further than they have been carried heretofore, partly because the dwellers by the banks of rivers are becoming more and more conscious of the charms of a pure and limpid stream, partly because experience has shown that the manufacturer, when prevented from discharging his waste in the accustomed way, has more than once found means of turning it to highly profitable account, and has in the long run been the chief gainer by a prohibition which at first he regarded as a hardship.

2. POLLUTION INCIDENT TO CULTIVATION OF THE SOIL.

The influence of the cultivation of farm lands in polluting streams running through them has been the subject of some investigation, and experiments bearing on the question have been made in England, France, Germany, Austria and other European countries. The interesting point with reference to the pollution of water courses from this source, is the small amount of rainfall which actually passes through the soil, especially during the summer months, at which season it has been found that there is almost an entire absence of pollution from this source. If lands have been heavily manured in the winter or spring, and the process is followed by wet weather, the percolation and consequent escape of noxious matters into an adjoining stream would, of course, be very much greater than if the spring season were dry. Fortunately, however, at such season there are usually freshets, which rapidly and effectually cleanse the stream and counteract ill-effects.

The depreciation of water supplies by soil pollution is generally at its minimum in the winter, when the ground is closed by frost, so that the winter showers and water from melting snows do not soak into the ground, but flow over the surface into the creeks and rivers.

Dr. Gilbert says: "When manurial matters have passed through a considerable depth of soil, there is not so much danger from ordinary agriculture as is sometimes supposed, but it should be fully understood that water largely contaminated with any kind of putrefying organic matter is always unsafe as a source of domestic supply." This view is also maintained by the Rivers Pollution Commission of England. They have declared that "water collected from the drains of cultivated land is invariably more or less polluted with the organic matter of manure," and that, "such polluted surface or drainage water is not of good quality for domestic purposes," but they say "it may be used with less risk to health than polluted shallow well water, if human excrementitious matters do not form part of the manure applied to the land."

Dr. Brouardel, the distinguished Paris hygienist, in a report recently made to the Academy of Sciences of that city, has demonstrated the fact that the bacilli of typhoid fever will live during many months in the earth, and are finally carried by rains into water supplies a considerable distance from the place where they were deposited. Pasteur has shown this to be the case with the microbes of charbon and septicæmia, and his experience has lately been confirmed by Bollinger, of Germany. Dr. Charrin, the eminent French biologist, has conclusively shown that the microbe of infectious pus will preserve its vitality for a long period in a cultivated soil. As we know that the fecal discharges of persons suffering from certain diseases are infected, it is easy to comprehend how the percolations of such materials into sources of drinking water may be fraught with disastrous consequences. It is indispensable to the health of communities, therefore, that the utmost care be taken to preserve the purity of their respective water supplies, and to guard them with unceasing care against every source of contamination.

3. POLLUTION FROM GRAVEYARDS.

Nitrogenous organic matter and ammonia are the dominant principles of water that has leached animal matter in a state of putrefaction, and these elements, which the water sometimes takes up in large quantities, especially from human bodies that are undergoing decomposition in the ground, are not completely separated by filtration through the soil. Rain water falling upon a porous soil sinks vertically, unless it comes in contact with an impervious stratum, such as clay or stratified rock, when it may flow off horizontally to a great distance. If water comes in contact with vegetable matter in the soil, it will take up a certain amount of carbonaceous matter, which may not be especially injurious unless in large amounts; but the case is quite different if the water should come in contact with decomposing animal matters, because the animal tissues, in undergoing putrefactive decomposition, give rise to very complex products, which are very soluble and extremely injurious to the quality of potable water. Unless the water filters through a quantity of soil, and soil of such a quality as will completely remove the products of decomposition, it is unsafe for domestic purposes, however far it may have passed under the ground before reaching the water supply.

4. POLLUTION FROM HOUSEHOLD SEWAGE.

It is obvious that infection of the soil by decaying organic matters is liable to vitiate subterranean waters and render them unsafe for drinking and culinary purposes. Depreciation of a water supply by household or domesticse wage is one of the worst forms of pollution. It not infrequently happens that waters fouled in this way contain infectious germs, and the necessity for exercising great care with reference to them is not only important but urgent. All waters, even the purest, contain some organic matter, but when it exceeds a certain limit, or has undergone putrefactive changes, the drinking of such water is attended with risk and even with danger. This is especially the case with reference to human excreta. Professor Mallet, of the University of Virginia,* has called attention to the fact that no known poison, in the diluted state, will produce the effects which have been traced to drinking water contaminated with human excreta; in fact, there seems to be no dilution which can make such polluted waters safe. They are the culture fields for the germs of the most deadly diseases, such as cholera, typhoid fever and dysentery.

Dr. Frankland maintains that water once contaminated with excretal sewage, even if purified subsequently by filtration in the most perfect way attainable, if not positively dangerous, is still unsafe to be used. "There are," he says, "animal organisms existing in sewage matter so minute as not to be seen by the unaided eye, and we have reason to believe that they even exist outside the range of microscopic vision, and possess powers antagonistic to human life."

Dr. Macadam, of Edinburgh, who has paid great attention to the water question, says: "The line must be distinctly drawn between non-putrescent organic matter and that which is putrescent. Impregnations from household sewage form the most dreaded contamination, and yield waters which, though clear and sparkling, are yet most unwholesome and deadly."

It is true we cannot always prevent a certain quantity of household refuse from falling upon and penetrating the soil, but it is nevertheless a duty which we owe to the public health to reduce this source of pollution to a minimum. It will always be found that the increase in certain diseases is *pari passu* with the increased pollution of the water supply, no matter how abundant the flow of water may be. The annual death-rate in New Orleans from typhoid fever is only 16 in 100,000 of population. Why? Because sewage cannot pollute the water supply of the city, which is received principally from tanks or cisterns above ground filled with rain water. In Philadelphia, where the water supply is taken principally from the Schuylkill river, which drains a vast agricultural and manufacturing territory, and receives the influx of foreign matters from two large and growing cities, besides many smaller towns, and is known to be contaminated, the annual death rate from typhoid fever is said to have increased in a few years from 56 to 68, or 12.16 per cent. per 100,000 of population.

It is a great error to suppose that infected matter is rendered innocuous by dilution with water. Dr. Mead Bolton, late assistant professor of bacteriology in the Johns Hopkins University, following up the experiments of Flugge, of Breslau, has shown* that the most dangerous microbes will not only live but multiply in the purest water when once introduced. The microbes of charbon, he says, will disappear in six days, but their spores, that is to say their eggs, will be preserved for twelve months. The microbes of typhoid fever have been observed to live in practically pure water for thirty days, and three months in water containing one grain of organic matter per quart of water. As to cholera bacilli, dirty water is a marvelous medium for their propagation and growth; and even in ordinary water it has been ascertained that they will live at least seven months.

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* Report of the National Board of Health.

PRECAUTIONS AND REMEDIES.

The *precautions* that are best suited to preserve water supplies from contamination, and the *remedies* most appropriate to restore purity when lost, either by ordinary causes, or by those that produce epidemic diseases, may be classified as follows:

1. EXCLUSION OF ORGANIC FILTH.

Nearly all natural waters hold in solution or suspension a larger or smaller proportion of organized matter, which determines, to a certain extent, their impurity and unfitness for domestic purposes. We shall divide the organic matter present in water into the living and dead--both having their origin in the animal or vegetable kingdoms. The dead animal matter, among the natural causes of contamination, consists of the bodies of fish, insects, infusoria, etc., as also the soluble nitrogenized compounds dissolved out of these by the water. The dead vegetable substances are the remains of water plants, portions of land plants, leaves of trees, etc., which, particuarly in autumn, are found in river water in considerable quantities. As the laws of vitality have no longer any control over these substances, they become decomposed and resolved into their component elements, which combine according to the laws of chemical affinities, and yield products complex in their chemical constitution, and of a more or less dangerous or unwholesome nature.

The living organisms of animal origin found in water are fish, infusoria, insects, etc.: of vegetable origin, water plants, and a variety of singularly organized atoms, invisible to the naked eye, known by the popular name of microbes, which are certain colorless algæ belonging to the family bacteriaceæ. Insomuch as the living animal and vegetable productions are dependent upon the dead organic matter of the water for their sustenance, it follows that wherever living beings are found in water there must exist the requisite materials for their nourishment. Pure *distilled* water can neither sustain animal nor vegetable life. The existence of living organisms in water in larger or smaller quantities, is an indication of the greater or less amount of soluble organic matter in the water, as also of its purity or impurity. When they exist in small quantities it follows, other things being equal, that the water must be pure. These living beings, animal and vegetable, act as depuratory, and we learn by their presence that there must exist the requisite amount and proper sort of food for their maintenance: hence their existence in water denotes a certain amount of soluble organic principles. We cannot but think, therefore, that the value of the information derived from microscopical observation of the organic impurities in water has not been heretofore sufficiently insisted on.

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* Nouvelle Revue d'Hygiene.

It is now agreed that the sewage matters of towns, including excretal and household wastes, however largely diluted, cannot with safety be allowed to flow into any source of water supply used for dietetic or culinary purposes. In order to carry off such wastes a system of closed vessels or impermeable pipes should be provided, distinct from the storm water drains, to discharge the matter at a depot or outfall independent of any river or stream, except for a practically pure effluent. The discharge, directly or indirectly, of crude sewage into any source of water supply, however remote, is a constant concomitant of epidemic diseases, while a proportionate exemption from such maladies will invariably follow the removal of the pollution. A pure and abundant supply of water is cheap at any price, and "millions" to secure it, would be better than "millions for defence." I scarcely need add that all manufactories and trades should be required to clean their own waste; not, of course, to convert it into a chemically pure water, but simply to deprive it of its power to become a nuisance to others when discharged into a public water-way.

At the International Congress of Hygiene, which assembled in Paris during the Exhibition of 1889, there was an interesting debate on the pollution of rivers. The congress decided that the pollution of water courses or rivers by the residue of factories should, in principle, be forbidden, and that polluted water from factories should not be allowed to flow into a stream until it had been proved to be absolutely free from all injurious substances. The congress was of the opinion that the most perfect method of purification was by irrigation. This, of course, must in certain cases be preceded by such mechanical and chemical processes as would render the water fit for agricultural purposes. It was related that many manufacturers had benefited by the application of this law, as in their efforts to prevent the pollution of water courses they had made discoveries enabling them to utilize waste products. The difficulty was with the smaller manufactories—not rich enough to take the necessary measures. The congress further decided that where persistent resistance was displayed the authorities should themselves execute the work prescribed for the purification of water, and compel the persons interested to pay the cost.

2. PURIFICATION OF WATER BY ALUM.

The use of alum as a purifier of water seems to date back a long time. Particular attention was directed to its use by Jennet, in 1865, in an article published in the *Moniteur Scientifique*. He found that 2.3 grains of alum to a gallon of water rendered it drinkable, even when it was quite full of foreign matter. The time taken for this clarification was from seven to seventeen minutes. Prof. Austin, of Rutgers College, N. J., states that the amount of alum used by Jennet is unnecessarily high, and in some experiments instituted to determine what is the practical minimum limit of alum that is needed to clarify New Brunswick hydrant water, he found that 1.2 grains was about as small an amount as it seemed practical to use to get a perfect separation of the impurities. Some waters, he thinks, may require less and some may require more; but this is a matter very easily determined for any prarticular case which may arise. The great argument in favor of alum as a purifier of water is that it is cheap, can be obtained everywhere and is not highly poisonous.

3. FILTRATION FOR THE PURIFICATION OF WATER.

Chief among the subjects discussed at the Paris congress, already referred to, was the purification of drinking water by artificial filtration, and some experiments were related which appear to show that noxious microbes may be removed, or at least rendered harmless, by certain methods of filtration. It was stated that guinea-pigs were inoculated with water which contained the microbe of anthrax, and that those inoculated with the water prior to filtration died with the usual symptoms of the disease, while those inoculated with the same water after filtration survived. A still more astonishing statement has been made by a London savant, viz: That "a sufficiently careful filtration will remove most organic matters—*among others, strychnia;*" and it is said that the chemist who made this discovery was so sure of his facts that he drank, after filtration, a quantity of water in which, before it was poured into the filter, a poisonous dose of strychnia had been dissolved.

Filtration is no doubt an excellent practice, and one which, however it is accomplished, has at least the merit of rendering water more pleasing to the eye, if not to the palate; but it cannot be too widely known that some forms of filter do no more than this, and that water which is very bright and sparkling may yet contain noxious matter in solution. It would be well for the sanitarian, before extending his approval to any process of filtration, to understand explicitly the conditions which a perfect filter should be expected to fulfil, and to know that it has been subjected to adequate tests. Without this knowledge a mere belief in the efficacy of filtering may chance, in the long run, to prove a source rather of danger than of safety to the public. It is not sufficient to rely upon the sparkling limpidity or the refreshing sweetness of an effluent, because this will afford no security that the special characteristics on which the usefulness of the filter depends will be preserved in all future examples.

4. FILTRATION THROUGH CHARCOAL.

For many years charcoal held a high place as an efficient purifier of water. It has great power of absorption, but it is also capable of saturation. The experiments of Mr. Edward Byrne* deserve, in this connection, particular notice. He has shown that with a filter of animal charcoal weighing four and one-half pounds, through which only twelve gallons of water were passed in twenty-four hours, the purifying effect was equal to the removal of fifty-five and one-half per cent. of the organic matter from the first gallon. This gradually declined until at the fourth gallon only 1.33 per cent. were removed, and already at the eighth gallon the action was reversed, organic matter being given back to the water. It has further been proved, especially by the experiments of Dr. Chaumont, that a low organic life is speedily developed in water which has filtered through charcoal, and the same effect is produced in water by long contact with this material.

The Rivers Pollution Commission of England say in their fourth report, p. 220, that "the property which animal charcoal possesses of favoring the growth of low forms of organic life is a serious drawback to its use as a filtering material for potable water." The commission found that "myriads of minute worms were developed in the charcoal and passed out with the water."

The utility of domestic filters for the purification of water intended for culinary or dietetic purposes, and the advisability or necessity of their universal adoption is strenuously insisted on by some persons and as firmly denied by others. There can be little doubt that filters are too frequently regarded as a kind of conjuring apparatus which will go on yielding to an indefinite extent pure water from dirty water, without receiving a tithe of the cleansing and attention which are bestowed on the rude sand beds of ordinary water-works. It would be well to remember that the success of any filter in the accomplishment of its legitimate work depends upon the frequency with which it is cleaned. No house filter should be used continuously for a longer period than two or three days without drawing off the contained water and allowing the air, which is much more destructive of organic matter than water, to pass freely through the filtering material for several hours. It would be well to have two filters and use them alternately every forty-eight hours. All filters in which the materials are enclosed between sides which are cemented or soldered into the case are to be avoided, as such filters are not capable of being easily cleaned.

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* "Institution of Civil Engineers," May 21, 1867.

5. FILTRATION THROUGH SAND AND GRAVEL.

From time to time considerable stir is made in scientific and popular papers and at sanitary meetings about some new device for purifying water, and consumers, terrified by the dismal pictures drawn of the condition of the town's water, frequently fall victims to sanitary "quackery," and purchase costly filters, the best of which are rarely more efficient than a common flower-pot filled with sand and gravel, while the worst are infinitely lower in the scale of utility. The simpler the construction the more effective generally will be the filter.

The artificial filtration of water on a large scale has become very general throughout Europe, where the water supply is taken from rivers, lakes or ponds. The main cause of the difficulties which have been encountered in this direction is the failure to obtain an economic system for such enormous volumes of water. This is proved by the fact that out of the numerous filtering processes, both mechanical and chemical, that have been tried not one has been generally adopted. In all mechanical filters, whether of sand or other granular beds, the impure liquid is pressed against the porous material, the surface of which should be sufficiently fine to arrest the solid impurities and allow only practically pure water to pass away. When these suspended impurities are considerable, or of a slimy nature, their deposit on the filtering surface quickly becomes so impervious that the liquid is prevented from passing through the deposit to the filtering surface, even though great pressure be employed. The operation consequently comes soon to an end, and cannot be resumed until this deposit is removed. Owing to these repeated stoppages at short intervals for cleansing, such an immense amount of manual labor, and such a large number of spare machines or filter-beds are required to filter the water supply, even of a small town, as to render the cost very burdensome. It is, therefore, evident that for a system of sand filtration to be successfully employed in an economic point of view, it is necessary that these frequent stoppages be avoided. Recent experiments in this direction would seem to indicate that this can be accomplished, and the filter effectually cleaned if a reverse current of water is made to pass through the filter-bed with sufficient force to agitate and separate the grains of sand to a depth of two or three inches from the top surface, thereby freeing it of the impurities which stop filtration. This process of cleaning is rendered possible by the fact that the suspended impurities are generally arrested immediately on the top surface of the sand, and never penetrate to a distance of more than two inches below the surface.

It has been stated that sand filtration is essentially mechanical, arresting only suspended matters, but experiments and observations made at the Berlin filter beds have quite established the fact that after some hours use the beds take on a peculiar action, which modifies to a considerable extent the dissolved matters in the water. At any rate, the filtration becomes more perfect after the bed has been in use some time. This is accounted for in two ways:

1. That certain solid matters of a chalky or mineral nature held in the water are deposited on the filter-bed and form a good filtering medium.

2. That the thin deposit which takes place on the surface of the filtering-bed is composed of minute *bacteria* which, through their depurating power, add greatly to the efficiency of the filter-bed.

No doubt these minute bodies eventually penetrate, to a greater or less extent, the entire body of the sand, and thereby improve its qualities as a filtering medium. In cleaning the filter, therefore, it is important not to disturb oftener than necessary more than a few inches of the top surface, or only so much of the surface as retains the solid matters that would stop filtration.

6. FILTRATION THROUGH SPONGY OR METALLIC IRON.

Bischoff's spongy iron has been subjected to thorough examination from several points. Besides the exertions of the inventor himself to bring the material into notice as a valuable filtering medium, it has been warmly recommended by Dr. Frankland, in the sixth report of the Rivers Pollution Commission of England. The experiments of Dr. Lewin, of Munich, however, gave results differing widely from those of Dr. Frankland. The best opportunity of witnessing the attempted application on a large scale of Professor Bischoff's system of purifying water, which had been worked out so successfully on a small scale of domestic filters, was afforded at Antwerp, in 1883. Though correct in principle, the application of spongy iron over large areas led, after some months, to the obstruction of the filter-beds, and would have compelled the abandonment of the system had it not been for the bold and radical change which it occurred to Mr. William Anderson, a civil engineer of London, to introduce. The spongy iron was removed from the filter-beds, and the reservoirs containing it were transformed into sand filter-beds, on which oxide of iron speedily forms, and plays an important part in the purification of the water passing through it.

Sir Frederick Abel appears to have suggested the application of ordinary metallic, instead of spongy iron, and Mr. Anderson seems to have worked out the idea most successfully in his application of what is known as the revolving iron purifier, which has now been in operation at Antwerp about five years. On the authority of Professor Kemna, the distinguished Belgian chemist, it may be stated that so complete is the satisfaction given, that similar means are now in operation at Gouda, at Dordrecht, in Holland, and at the establishment Cail, quai de Grenelle, in Paris. Experiments on a large scale have also been made at Ostend, Berlin and London, and steps have been taken for its introduction into this country.

It is an interesting circumstance in connection with the purity of the water now obtained at Antwerp, and which is taken from the filthy river Nethe, that some of the steamers sailing thence to New York take in a supply of the Antwerp water for the double voyage, in preference to refilling from the Croton aqueduct for the return voyage.

A table of analysis showing the degree of purification attained is appended:

Effects of Purification by the Anderson Process.

	ORGANIC MATTER.		AMMONIA.			
			ALBUMINOID.		FREE.	
	Before.	After.	Before.	After.	Before.	After.
Antwerp,	77	31	0.27	0.08	0.40	. . . .
Dordrecht,	34	14	0.14	0.05	0.12	. . . .
Gouda,	151	85	0.41	0.23	0.05	0.03
Ostend (single purification),	135	76	0.58	0.22	1.30	0.12
Ostend (double purification)*,	76	40	0.22	0.19	0.12	0.03
Paris,	51	25	0.16	0.06	0.40	. . . .

* In double purification the water is twice passed through a revolver, and twice sand-filtered.

7 THE "INTERNATIONAL PROCESS" OF FILTRATION.

This process consists in passing the water through a specially constructed filter bed of powdered iron called "magnetic spongy carbon," "or "polarite." This material is obtained from an iron ore which is found at Abercrane, in the south of Wales. It consists of carbonate and silicate of iron, together with some aluminum, calcium and magnesium. The ore is naturally very porous and absorbent. To manufacture the material (polarite) the ore is heated in closed vessels, with a limited supply of air, by which the carbonic acid and water are driven off and oxygen is taken up from the air. The resulting material is the black oxide of iron, which is extremely porous, quite insoluble and does not rust on exposure to air. It is to these properties that it owes its value as a good filtering material for impure water.

The material which presents the largest surface for the occlusion of oxygen in the smallest cubical space is the most powerful purifier and filtrant, provided it is composed of the proper substance. Spongy platinum fulfils these conditions best, and is consquently the most powerful purifier and filterer, and the best insoluble oxidizer known.

Its enormous cost, however, shuts it altogether out from practical use, and the magnetic spongy carbon, or polarite, has been offered as a substitute. The admixture of this substance with sand forms a filtering medium which is said to purify itself by destroying organic impurities which would otherwise contaminate the beds. It is represented that the process of combustion is constantly going on in the pores of the material, and the products of that combustion are tasteless, odorless, colorless and perfectly wholesome, creating carbonic acid, with which the water becomes charged to a limited extent, rendering it sparkling as well as palatable in the highest degree. Polluted water taken from the river Thames below London bridge, was passed through a filter composed of this material, and on being then analyzed was found to be purer than any drinking water supplied by the London water companies.

Every one of experience is aware of the disagreeable odors arising from the ordinary sand filter-beds, which possess no chemical purifying action, but merely act as strainers, retaining the solid matters and filth which corrupt and contaminate the water instead of purifying it. This, it is said, may be remedied by a layer of the "polarite." By the use of this filtrant properly arranged, it is not necessary to have the filtering beds half so large as is usual with the ordinary sand beds, since a bed containing a layer of polarite and sand mixed in equal proportions will do more efficient work than four times the extent of area where sand alone is used. Sir Henry Roscoe speaks very favorably of this material. He says: "The porous nature of the oxide (polarite) which is used in the filter, its complete insolubility and its freedom from rusting constitute, in my opinion, its claim to be considered a valuable filtering material."

Dr. Angell has also carefully examined the process, and reports the following experiments:

1. Ordinary domestic sewage was passed through nine inches of "polarite." By the permanganate test it was found ninety-four per cent. of the oxidizable organic matter was destroyed or rendered innocuous.

2. After passing a solution of sulphureted hydrogen, equivalent to four and two-tenths grains of oxygen per gallon, it was found that not a trace of the sulphureted hydrogen was left in the effluent.

Dr. Angell further states that "this material, though it permits the free transit of air and gases, is quite impermeable to atmospheric germs;" but the bacteria question is no doubt one which has probably still to be settled.

Taking bulk for bulk, it has been found that the following great advantages are in favor of the magnetic spongy carbon as against sand filtration:

(*a*) From an economic point of view the large filtering areas now employed would be greatly reduced.

(*b*) From a sanitary point of view the water would not be exposed in large surface to the unhealthy action of the atmosphere in or near large and densely populated cities.

(*c*) Lastly, and chiefly, the filtration by this process has been proved to be much purer than anything obtained by the ordinary process of filtration; in fact, we may with safety state that this material is capable of exercising a powerful effect on dissolved organic matter in water, and that it is one of the safest media in the market.

I have personally witnessed the satisfactory results of filtration through "polarite," at the sewage works of Acton, a growing suburb of London. Here the sewage of a large district is received and treated by filtration, and I found the resulting effluent to be bright, clear and free from any smell. A sample of the effluent kept nearly two months still retained its good qualities. It should be stated, however, that the crude sewage water was treated before filtration with a preparation of sulphate of iron known under the name of "ferozone."*

8. PURIFICATION OF WATER BY ELECTROLYSIS.

Dr. William Webster, of England, has recently brought to the attention of the public a new process for purifying contaminated water by electrolysis, which he claims will meet all reasonable expectations as to its sanitary character. Its action, he says, if carried far enough, will absolutely eradicate all organic matters. The device, on a small scale, may be described as follows:

1. An outer vessel which may be made of iron—the sides in that case acting as negative electrodes—and an interior vessel containing a carbon electrode. By placing an oxidisable plate in the same pot as the carbon, and connecting the two to the positive pole of the current, a hyperchlorite or chloride of the metal used is produced, which further assists the resulting action. The apparatus on a large scale may be variously modified according to the strength of the solutions of chlorides acted upon, and by the use of a dynamo.

By applying the current to a carbon filter arranged as above described, he was able to oxidise the organic matter in water. The positive pole being the porous carbon block, the nascent oxygen produced in the pores of the carbon by the electric current absolutely destroys organic matter, bacteria being killed and the filter-block itself kept clean. The action of porous carbon by itself is due to its power of absorbing noxious gases and effecting their destruction by bringing them in contact with atmospheric oxygen, but it is absolutely essential that there should be a free supply of air: how much more active the action is when nascent oyxgen and even when chlorine are constantly supplied by means of the electric current can be easily imagined.

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* For filtering potable water the company sells the magnetic spongy carbon, or "polarite," in the form of a coarsely granular powder, and they recommend that the filtering bed should consist of a couple of inches of shingle at the bottom, then nine inches of the material, and on top of this six or eight inches of fine sand. This sand should be either partly or entirely removed at intervals and be washed and replaced.

CONCLUSION.

The increasing population of large towns has made the question of water purification a very pressing one, particularly in relation to the purity of our rivers, most of which are unquestionably in a serious state of pollution. It may be that the present scientific knowledge is not sufficient to entirely and finally deal with this question; we should, however, aim at as high a standard of purification as possible; it is of no use to try half measures; but whatever the treatment may be, the nearer nature's action is approached, the nearer will we be to the solution of the difficulty. The oxidation of organic matter can only be attained by one mode—chemical action—whether it be by filtration, by the addition of chemicals, or by the force of the electric current.

THOUGHTS ON SCHOOL HYGIENE.

By GEORGE G. GROFF, M. D., LL. D., *of Lewisburg, Pa.*

President of the Pennsylvania State Board of Health.

On the subject assigned to me papers might very properly be addressed to school teachers, to directors and managers of schools, and to parents. In a circular issued by our state board of health, I have very fully explained to teachers those matters of hygiene to which they should give constant attention, viz, to the hygienic care of the eyes, and to all that tends in school to injure these organs; in reference to the use of drinking water; to cleanliness in and about the school; to wet clothing: to ventilation; to proper and improper exercise; to contagious diseases; to overwork; and to the use of tobacco and narcotics. This circular may be obtained by teachers in any quantities of the secretary of the state board of health in Philadelphia.

A similar circular to directors and managers of schools is contemplated, and as soon as it can be prepared will be issued by our board. This morning, then, only a few words to parents and friends of our common humanity in reference to hygiene as applied to school children.

After I had promised to write this paper I picked up the latest circular of our board, "Precautions against Consumption." On the second page of the cover is a diagram of the diseases *most fatal* in a neighboring city. Out of four hundred deaths in the city of Reading in 1880, one hundred and five, or more than twenty-five per cent., were from consumption, but examining the diagram further, it is seen that one hundred and twenty-eight of the four hundred deaths, or thirty-two per cent., are of diseases most commonly called diseases of children, and most probably of children of school age, or below. That is, of four hundred deaths in Reading in 1880, fifty-two per cent. are of diseases now known to be preventable, and thirty-two per cent. of these of children. While it is known to sanitarians that nearly every child born into the world *can* be reared to years of manhood or womanhood, yet the fact is that in Pennsylvania, in the nineteenth century, from one-fourth to one-fifth of all the children born die before reaching ten years of age. What a murder of innocents! And in a Christian state!

But why this state of things? Mainly on account of ignorance and indifference on the part of parents. These unfortunate little ones, who received the blessing of the Great Teacher, are born of parents who themselves, and their ancestors before them, have violated nearly every law which governs their physical existence. They come into homes where no welcome awaits them. They are improperly fed, improperly dressed, without proper attention as to sleep, fresh air or cleanliness. It is not alone the children of the poor and the ignorant who suffer in these respects, but in a very large degree also the children of the well-to-do, whose mothers, from improper and deficient education, as we believe, commit their helpless offspring to the tender mercies of ignorant nurses, while they, the mothers, are active in temperance, missionary, charitable, church or society duties. Shame, shame, that this is true, and yet it is. As an illustration, I was told a few days ago of an educated woman of a neighboring town, most active and efficient in temperance work, whose own boys are growing up in the streets while she devotes her time to others.

But what has this to do with school hygiene? This. To call the attention of teachers to the great need of educating the children, and parents too, to the need of knowledge on these subjects. Sanitary science is a matter of first importance. It is not a branch, for while in school, "we have no time" as a principal told me a few years ago. It is imperative. We owe it to every child to teach him the plainer errors of living which bring disease and death. But people are beginning to appreciate these things. But a few days ago a matron of culture remarked in my presence: "It is no longer fashionable to have delicate children about the home." The words show that the teachings of sanitarians are beginning to bear fruit. When in home and school the known principles of sanitary science are intelligently applied, we may expect a great diminution of sickness, suffering and premature deaths, and a corresponding increase of longevity and physical happiness. Contrary to the popular opinion, studious habits, even hard study, are not injurious to the general health. Rather, in well-regulated schools, the average health of the students will be found to be above those of the same age out of school. This is true of both young men and women. The statement applies to private schools where the *whole time* of the pupils is controlled, rather than to public day schools.

Irregular habits (irregular eating, drinking, loss of sleep, lack of physical exercise, overwork, excitement) are the causes of failure of physical power in students as in other persons.

At present students from the farms, the shops, the mines, have, as a rule, a better physical development than the children of professional men and of the well-to-do classes, which is certainly not a favorable showing for modern culture.

In European countries school children are often seen who are underfed. The same is true in our bountiful America. Indeed, with many young girls it is just the thing to eat about half enough to supply the demands of nature, and even the tables of many well-to-do people seldom contain what growing school children need. If only a small portion of the testimony of the children of the home for the blind in Philadelphia was true, in reference to the dietary of that institution, there was not a child there fit to be in school and at real work. I have myself seen the school dinner of a poor boy consist of cold Indian meal, mush and fried sausage; of a child whose parents were in comfortable circumstances, of bread and cold boiled potatoes, and of a rich child, bread and butter only. Children cannot grow and study on such food (unless we make an exception of the mush and sausage).

I once remarked that the young ladies in a female seminary made very little progress in their studies, when the answer quickly came, "What more could you expect, remembering what they have to eat?" I suspect this evil is a general one in homes and schools. Bread and coffee is not enough to start the day upon if much work is to be done.

School children do not have enough sleep as a rule. For children under twelve or thirteen years, ten hours out of each twenty-four should be spent in sleep, and all other students should have at least eight hours of sound sleep each night. This is most important.

School hours are, for young children, entirely too long. Not over three hours for children under thirteen and five hours for all others.

It is generally true that the play grounds are too small. In all small towns schools should be built in the suburbs, that large lots may be secured. If country children can safely walk two or even three miles to school through mud and snow, town children can certainly reach school, having good pavements.

One of the modern innovations most to be condemned is the abolition of the recess. A prominent teacher of a neighbouring county, in defending this movement. remarked that "if factory children can do without a recess, certainly school children can do without it."

The eye is the organ which *first* and most generally fails in school children. This is due to overwork of the organ, to insufficient light, to poor print, to the use of the eyes when the general health is below par, as well as numerous other causes. I once visited a school room in a Pennsylvania city with windows none too large, in every window two curtains and several shelves filled with plants. I have seen school houses in which the blinds were nailed shut to save the glass from being broken But this does not equal the cold, dark kindergarten room at the institution for the blind, into which sunlight is said never to enter.

Whenever the subject of school hygiene is mentioned one listens to hear something on ventilation. Bad air is bad enough, but it is given too heavy a load to carry. There are other evils much greater, viz.: The too long hours, the long terms, the lack of light, the underfed condition of pupils, over-heated or under-heated condition of the room, the inacessible and filthy privy or water closet, the system of cramming so general, the highly graded systems which bring all the children to one dead level of mediocrity in body and mind.

Our public schools furnish the means for the spread of the contagious diseases of childhood. An intelligent county superintendent of schools wrote me not long since. "Why, I have found all sorts of contagious diseases among the pupils of our schools, and the teachers apparently never taking any notice of them. I found one child so sick with scarlet fever that she could not hold her head up; I have heard children whooping with whooping-cough, and have seen them all spotted with measles, and right along side of other pupils." This should be controlled. Directors, physicians and teachers should be able to control this matter. The principal mission of the teacher, it seems to the writer, is to instill into his pupils a reverence for their own bodies, so that a generation of strong and pure men and women may be reared for the state. The truth of sanitary science will be best instilled when the teacher himself leads a pure and healthful life. Not upon the teacher alone, but upon parents, rests the chief responsibility in reference to the physical development of school children. This responsibility the parent cannot thrust upon the teacher.

MENTAL HYGIENE OF OUR BOYS AND GIRLS.

By ROBERT H. CHASE, A. M., M. D.,
Superintendent State Hospital for the Insane, Norristown.

It has been computed by those who have given the subject special study, that in another quarter of a century this Republic will contain a population of at least 100,000,000. The men who will then form, control and govern, this mightiest of earthly powers are now being prepared in our schools and colleges for their future lives—lives which to most will prove very eventful, and to a number illustrious.

How important, then, that their future, pregnant with the greatest possibilities, should, by every means in our power, be rendered auspicious, and that when our days of usefulness are over we shall not be given to self-censure and repentance that we have not contributed, in however slight a degree, to the power and luster to America.

This is a practical matter and not one of imagination, for every well-educated child with a healthy mind and body will add to the glory of this country, and each one who aids in its proper development will prove, though the service may be small, a true patriot.

But the systems of education as generally adopted in the United States are by no means the best for attaining the most desirable condition of mental hygiene in our boys and girls. It is a fact greatly to be deplored that mental overstrain in youth and early manhood is becoming a peril among Americans; and its disastrous results, as seen in afterlife, cannot be too frequently nor too emphatically proclaimed in tones of solemn admonition. This injurious influence of undue brain friction, which has its inception in our schools, will have, if allowed to continue unchecked, its termination in national deterioration and decay.

It requires but little insight of the operations of nature to discern that most of the laws of our being, as well as the blessings of Providence, are beneficial or prejudicial according to the wise or unwise use of them. The sun's rays, which are the vitalizing force of nature, may, when this principle is disregarded, produce death instead of promoting life. In like manner, education, the vitalizing force of civilization, may cause mental decay when misapplied or misdirected.

The brain, let me briefly state, is a beautiful piece of mechanism, wonderfully adapted to its purposes. It is composed of millions of "brain-cells" and "nerve fibers," sustained in a net-work, and abundantly supplied with blood vessels, which run everywhere through it. Its importance in the physical economy is such that it requires one-fifth of the blood of the body to maintain its vitality.

As the seemingly countless intricacies of nature's workings are reducible to the simplest forms of law, so the brain, as the mind's agent, performing such multifarious functions, follows this rule of simplicity in its construction. It depends upon the same physiological laws for its growth as other parts of the body, and, I will add, its functions are easily deranged and its powers of restoration are low. These are some of the physical properties of this heaven-endowed organ which has placed man in the scale of creation a little lower than the angels: and the proper exercise of its delicate functions in its development and training depends, in a very great measure, upon the methods of education.

Let me remind you that the natural periods of life are separate and distinct from one another, and that their duties and prerogatives should be confined each to its own term of years. Childhood, youth and manhood have well-defined limits, which precocity should not be permitted to over-ride.

A growth which partakes of the mushroom character means early maturity, and in turn premature old age. This unyielding law is operating in all animate nature. In the vegetable kingdom, the slowly-growing forest tree is the sturdiest. It takes deepest root; it lifts its head the highest: it has the toughest fiber, and in hardihood defies the storms of centuries. So it is with the races of men and also with individual lives— deferred maturity means strength and longevity.

The brain reaches its ripeness, on an average, five years later than any other portion of the human frame, and as a consequence it is more tender and susceptible in early life than generally the other organs. The chubby-faced infant in the nursery who passes his waking hours in a ceaseless round of action, kicking, squalling and eating [blessings on him!] with all his baby force—is the picture of physical strength, but his feeble and semi-fluid brain grows slowly, as it is needed but little at this stage of automatic life. The brain gets behind in the race until the general growth of the child has advanced somewhat, and self-preservation and other necessities demand the guidance of its controlling functions.

As years creep on, waste exceeds repair; but in youth the processes of waste and repair not only strike a balance, but there is a storing of reserve force for the purposes of growth. This surplus power, intended for brain nutrition, growth and building up, cannot be diverted from its legitimate ends without the risk of impaired vitality. The nervous, overtaxed brain, as a result of overwork, not only means ruined health in the individual, but in the succeeding generations its effects are seen in low mentality and ill-balanced minds.

That it is a defect of many of our schools of discounting the future, by forcing mental training in the young beyond healthful limits, there is little reason to doubt. Juvenile memorizing, for instance, may exhibit the handiwork of the teacher, but if carried to the extent that some zealous instructors would go, may result in mental strain, from which the victim may not recover in a lifetime.

> "With curious art the brain, too finely wrought,
> Preys on herself, and is destroyed by thought!
> Constant attention wears the active mind,
> Blots out her powers, and leaves a blank behind."

A well-known author says: "The endeavor to fill the minds of children with artifical information leads to one of two results. Not infrequently in the very young it gives rise to direct disease of the brain itself. In less extreme cases it causes simple weakness and exhaustion of the mental organs, with irregularity of power. The child may grow up with a memory taxed with technicalities and impressed so forcibly that it is hard to make way for other knowledge; and, added to these mischiefs, there may be, and often is the further evil that the brain, owing to the labor put upon it, becomes too fully and easily developed, too firm and too soon mature, so that it remains throughout manhood always a large child's brain, very wonderful in a child, and equally ridiculous in a man or woman."

The powers of growth and development are restricted in every individual, and beyond the limitations sent by nature no amount of training can carry them. Mental forcing cannot go beyond the capacity of the brain, taken at its weakest point. This is especially true when hereditary tendencies are considered. There is at our disposal only a definite quantity of energy. It is transferable to some extent, and if used in one direction it is lost in another. The law applies to the whole system, and may be seen in the physical life as well as in the operations of the mind. Exhausted muscular power implies, to some degree, mental loss, and, on the contrary, violent emotion or sudden shock causes in an equal manner muscular and organic weakness. This being the case, it is plain that undue pressure in any one direction will affect the entire organism.

Do we not see in this disregard of physical laws the cause of many of the nervous complaints which now afflict the educated classes? There is reason, I fear, for humbling of national pride in the thought that there is a close connection between American nervousness, which has become proverbial, and forced education—between juvenile brain tension and adult brain debility.

Another physiological axiom that should be recognized in undertaking a course of education is that bodily and mental energies need ample time for their effective utility. Forcing always signifies great waste. To run a mile is more fatiguing than to walk five miles; to go through in an hour what should take ten hours to complete would soon bring utter prostration: to perform in five the work of ten years is alike disastrous to nerve tone and mental stability. Many come out apparently unscathed from such ordeals of overstrain, but, alas! too many sink beneath the burden and become as a "bowing wall and a tottering fence." He who would bind himself to a wheel of ceaseless toil must expect Ixion's fate!

To appreciate these wide-spread dangers, let us look for a moment at the state of affairs in some of our select and public schools.

"The child," says a reliable author, "at even the tender age of five or six years; is confined in school five hours a day, on a hard seat, in a room often poorly ventilated and irregularly heated. During the larger portion of this time he is expected to have his mind occupied with his lessons, either in actual study or recitation. A few years later, say at the age of ten or twelve years, tasks of such extent and difficulty are imposed that it becomes necessary for him to study, in addition, one or two hours in the evening."

We should ever bear in mind that the object of schooling, in a physiological sense, is to make the brain vigorous, and to strengthen its powers of endurance and stability, which can only be accomplished under the guidance of wisdom and discretion.

Various writers on mental hygiene have prescribed rules to govern the hours of study, and have set the limits to healthful brain work. One of the best authorities, in a set of rule, concludes, "Three hours daily of school time up to nine years of age, four hours to twelve, and not more than six hours until after the pupil is fifteen years of age."

It is essential, let me say in passing, to the school-going child that he shall have not only good, natural sleep, but that there shall be plenty of it. But, strangely enough, sleep is regarded by many as a useless waste of time, and besides an impairer of the mind, which, like some honeyed temptation should be strenously resisted and avoided. Sleep, I assert, is not a passive rest or negative state in which we lie awaiting the dawn, but aptlv may it be compared to a filter. It strains off the gross impressions which do not enrich; or, like the farmer's fanning mill, it winnows out the superfluous materials of the day—it separates the chaff from the wheat.

If the habits of the men of letters be inquired into, it will be found that six hours a day, on a average, are quite enough for a mature mind to be engaged with advantage in study. Yet in the training of our boys and girls we find that both teachers and parents, in their blind ambition to hurry them forward, conspire in imposing tasks of such character and magnitude as to require longer hours of study than we know to be best for the adult brain.

Numerous precedents of over-study could here be cited, and did time permit, even within my own experience, I could instance many cases of the sad effects of this abuse of education. I have heard voices that have echoed back the terrible warning in shrieks of madness, and others, again, in the low moans of a bereft mind.

"If I had written down the fierce apostrophe of a young lady of twenty on her entrance into the asylum at Morningside, at the end of a school career of unexampled success," says Dr. Clouston, "the reading of it would do more to frighten the ambitious parents of such daughters from hastening their children forward at school too fast than all the scientific protests we doctors can make. She was well aware of the cause of her illness, and with passionate eloquence enumerated the consequences of her shattered health."

Education, to answer the purposes required of it, must embrace the highest and broadest conception of the term, and be marked by a complete symmetry in all its bearings. That is, the physical, mental, and moral parts of the pupil's nature must be trained together and in harmony in accordance with the laws that govern them. His entire being must be considered as a whole; the brain not over-stimulated at the expense of the body, nor physical training forced beyond due bounds. From this point of view, education is not mere instruction, but means the healthful development of both mind and body. A child, by a hothouse system of instruction, may be full of facts, and still its education but just begun.

It should be kept in view by teachers that the culture of the higher, as well as the lower, faculties is accomplished by judicious exercise and regulated activity of their function within the bounds of health, precisely as physical training is attained by the athlete; and, furthermore, that the same laws which control the nutrition of the body in general apply with equal force to mental food.

We are not to regard the mind as a storehouse of knowledge alone, but also as a workshop, wherein, through its subtle action, ideas are elaborated and all the higher manifestations of mind are developed. Thus, by a wholesome course of education, the cultured mind is built up into a most perfect structure; its weakest points made strong, its by-ways guarded, until it possesses all the advantages over an uncultured one which strength has over weakness, endurance over instability, and which intelligence has over ignorance, everywhere and in all the circumstances of life.

It therefore appears from the evidence abduced, that the true aspirations of parents and teachers should be to rear children with strong and healthy minds, not strained and overburdened ones. This is true, even if their ambition be of the most worldly nature; that is, to have their sons or scholars not great and good, but powerful and distinguished. For in the end, what gratification can they derive from the acquirements of a child, however precocious, who, at maturity, has a diseased and withered brain.

It is a fact not disputed, that scarcely one of the greatest of American generals took high rank as a student at West Point, while some of the very greatest stood low in their class. This is not said to en courage idleness but to illustrate the point that the largest and most powerful brains require time to develop and may be blighted by too intense study during youth. The same remark applies to every one of the higher walks of intellectual life. How few of our greatest philosophers, authors, poets, statesmen, lawyers or physicians, have been distinguished at college by close application to study. Frequently we find in reading the biographies of those whose names in our literature have become immortal, that disparaging predictions were made of their future by their preceptors because they did not overtax their minds by too arduous study.

The question of mental hygiene of our boys and girls, then, is a momentous one, both to individuals and to the nation, and upon this people, at the present time, rests the duty of solving it, as required by mercy, by justice, and by the most exalted wisdom.

DEFECTIVE VISION IN OUR PUBLIC SCHOOLS.

BY S. D. RISLEY, M. D., *Ophthalmic Surgeon and Chief of Ophthalmic Clinic in the Hospital of the University of Pennsylvania.*

In view of the important relation which adequate vision sustains to the successful career of the pupil, there is just cause for surprise that so little attention has been given to the subject at the outset of the school life of our children. It needs no argument to show that the child who enters upon the educational process with defective vision is seriously handicapped in the struggle before him.

It is but fair to assume that the failure to inquire into the state of the vision before entering the child at school is due to ignorance of any existing necessity, rather than to the wilful neglect of a recognized obligation, since in many other directions we constantly witness the most praiseworthy attention, on the part of guardians and parents, to the welfare of the children. The very large number of children whose progress at school is impeded by congenitally defective eyes is, I am sure, not appreciated by those who have made no study of the subject. The absence of complaint is not sufficient evidence of good vision, for children are not prone to complain. Many a child who gets on indifferently at school, and gains a reputation for dullness or indolence, is prevented from going forward by imperfect vision—a fact of which he may himself be ignorant; for how is the child to know but that the watering eyes, the blurring page and aching head which follow any protracted use of the eyes, are the common lot of mankind? This has always been his experience; why not that of his fellows also? So, without complaint, he struggles on, asking no relief from conditions which to him are only a part of the disagreeable duty of his school life. That these remarks are not mere idle statements finds ample demonstration in the published records of numerous observers both in this country and in Europe, who have patiently examined large numbers of eyes in the schools.

It is not in harmony with the design of this paper to give a résumé of this work, but a few figures are introduced which, it is hoped, will serve as a sufficient demonstration of the great need which exists for the adoption of some simple but systematic method of inquiry into the state of the vision of every pupil when entering upon the long educational process, and at every successive step in advance. For this purpose I select the statistics, collated by myself in the public schools of Philadelphia, for the reason that they are the record of conditions existing at our own door.

In two thousand four hundred and twenty-two eyes examined one thousand and eighty-four were found to have less than the normal sharpness of sight, one thousand and ninety-nine had more or less trouble arising from the use of the eyes at their books. While many of these were the subjects of but slight impairment of vision, and did not suffer greatly, it is nevertheless sadly true that in a large percentage of them the impairment was sufficient to unfit them for the continuation of their work without placing the integrity of the organ in peril. It is not intended by this statement to convey the impression that blindness was imminent as the penalty of continued work, but that under the imposed strain the eyes which were the subjects of these congenital anomalies became also the subjects of certain pathological conditions which not only made the performance of the school tasks painful, and thus retarded the progress of the pupil, but led up to further impairment of sight through the disturbed nutrition of the eye ball. These figures —showing, as they do, approximately five per cent. of eyes with less than normal vision, and, withal, troublesome from pain or other disturbance—may well cause surprise to those who have not had the opportunity to investigate the subject; but, large as are these figures, a complete expression of existing conditions compels the further statement that there still remains a large number of eyes with hypermetropic refraction, which, nevertheless, have normal acuity of vision, but perform their work at a near point, as in reading or writing, by dint of greater strain upon the muscle of accommodation than is required by the emmetropic eye, and which, sooner or later, carries them over into the group of asthenopic or painful eyes, with commencing intra-ocular disease.

In the investigation of the eyes in the schools all observers have classified the eyes into three groups, viz, The emmetropic or model eye, the hypermetropic or shallow eye, and the myopic or near-sighted eye. The immediate object of the inquiry was to determine the relative frequency of these three kinds of eyes. It had long been known that the percentage of near-sighted eyes steadily increased with the advancement of the pupils in the educational process. To illustrate: Erisman found in the lowest classes in the schools of St Petersburg thirteen and six tenths per cent. of myopia, which percentage steadily advanced as the higher classes were reached until forty-two and eight tenths per cent. were found in the highest classes. In the schools of Philadelphia, commencing with four and thirty-three-hundredths per cent. at eight and fifty-hundredths years of age, it steadily advanced to nineteen and thirty-three-hundredths per cent. at seventeen and fifty-hundredths years. I am anxious here to impress the fact that the myopic eye is a diseased eye, and that its increasing percentage throughout the school life is but the expression of the resulting harm from the imposed strain of the work at school. Its full significance will be comprehended when it is understood that the near-sighted eye is acquired by distention of the ball, a condition made possible only by a profound disturbance of its nutrition through diseased pathological processes. It is obvious that they must have been recruited from eyes that at the beginning of school life belonged to one of the other group of eyes, *i. e.*, either the emmetropic or hypermetropic eyes. The investigation in the schools of Philadelphia was undertaken with a view of not only determining the percentage of the different kinds of eyes in the schools, but also for the purpose of ascertaining the relative amount of disease in all states of refraction of the eye. It was hoped by this means to discover the early stages of those forms of disease which are characteristic of the myopic eye, and thus place in our hands the facts which would reveal the cause of the myopic and the best means for its arrest. To this end a careful study of each eye was made, and all observed conditions were recorded for subsequent analysis. The condition of the general health, the hygienic surroundings of the pupils, the age, etc., were all carefully considered, as well as the state of the eyes. The result of the subsequent analysis is graphically set forth in the following percentage curves.

In Table I, the percentage curves indicate the relative frequency of the three kinds of eyes. In general terms it reveals a high percentage of hypermetropia at eight and fifty hundredths years of age, which steadily diminishes as the higher classes are reached, and a low percentage of myopia which steadily increases with the advance of the classes.

Table II reveals the state of the eye in different states of the refraction. The curve representing the percentage of disease is seen to rapidly rise as we trace it from its lowest point in emmetropia, through hypermetropia and myopia and their attending astigmatism, until the alarming point of eighty-seven per cent. of disease is reached in myopic astigmatism. It will be observed that this disease curve starts at the already high point of thirty two per cent. in emmetropia, a fact accounted for by the very unfortunate condition of a few classes of very young children, who were found at work in rooms facing the light, and in one primary class where the only light they received was reflected from the ceiling of the room, or came to them over the tops of partitions from remote windows. In this room I found it extremely difficult to read diamond type on a bright mid-day because of the insufficient illumination. It is almost needless to add that not a single healthy eye was found in this class. When these unfortunately-placed classes are omitted, however, from the percentage curve, the starting point for disease falls much lower, but especially was this true for emmetropia. In one class ordinarily situated in its hygienic surroundings, the percentage of diseased emmetropic eyes fell as low as two per cent., while in the same class the percentage of disease in myopic eyes rose to fifty per cent. I have drawn the contrast just here for the double purpose, first, of emphasizing the importance of proper attention to suitable hygienic surroundings; and, second, because it was shown that under conditions where all suffered, the eyes having some anomaly of refraction, *i. e.*, the defective eyes, suffered most severely.

In Table III, the steadily advancing percentage of pain is depicted in the curve marked "asthenopia," by which is meant weak, painful or troublesome eyes, headache from eye-strain, etc. The second curve displays the lowered sharpness of vision in the various states of refraction of the eye.

In Table IV, the refraction and general state of the eye is set forth in relation to the age of the pupils. It revealed the somewhat startling truth that notwithstanding the preceding developments, the eyes grew better as the age advanced, a fact variously accounted for. In the first place many of the worst eyes had been compelled to give up the struggle. Others had been subjected to professional care, and were found wearing glasses which corrected the ocular defects, and their eyes were in a healthy condition. The most important factor, however, is the physiological one that the children were older, and their eyes better able to withstand the strain of their school work—a fact teaching the very important lesson that the tender tissues of early childhood are relatively more liable to disease as the result of eye-strain, and that, therefore, we send our children to school at too tender an age.

I have been careful to urge the important relation which is shown by these statistics to exist between the congenital defects of the organ of vision and the harm which results during the school life, for the reason that I am convinced that any system of hygiene devised to prevent the increase of disease, which finds its expression simply in the increasing percentage of near-sight, will fail of its purpose if it does not take this primary fact into consideration. The existence of these congenital defects should emphasize the importance of attention to every detail of school hygiene for it is even more important for weak than for strong eyes. Too much care cannot be bestowed upon it in our endeavor to secure sufficient light, appropriate seats and desks, and text books printed with clear type of suitable size, properly spaced, on good paper, etc.; but we must understand that the utmost attention to these important details, directed by the widest experience and highest skill, will not save from injury the eye which enters upon the educational struggle hampered by an anatomical defect. We have already seen with what unerring certainty they sooner or later are forced into the category of asthenopic eyes.

TABLE I

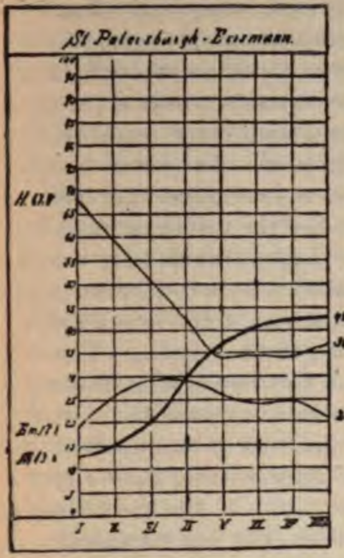


TABLE II.

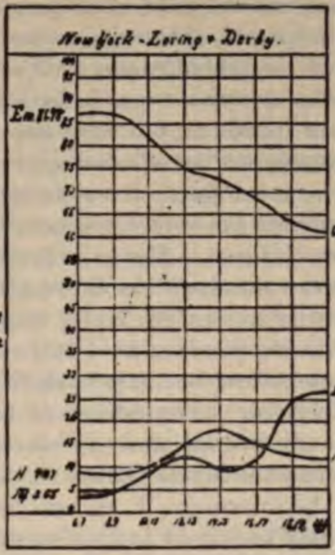


TABLE III

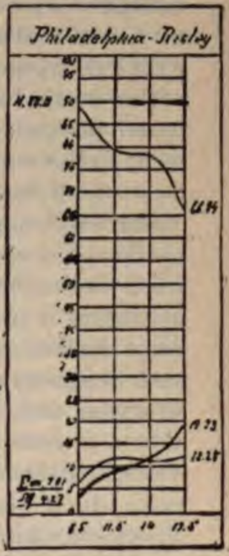


TABLE IV.

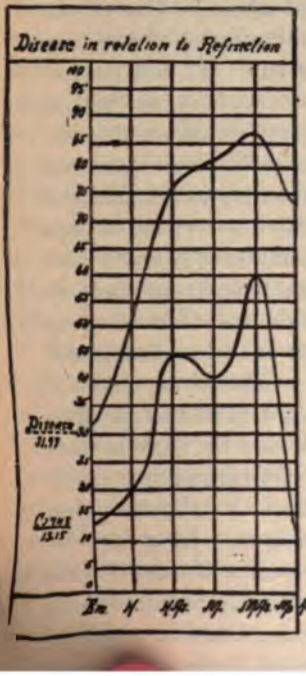


TABLE V.

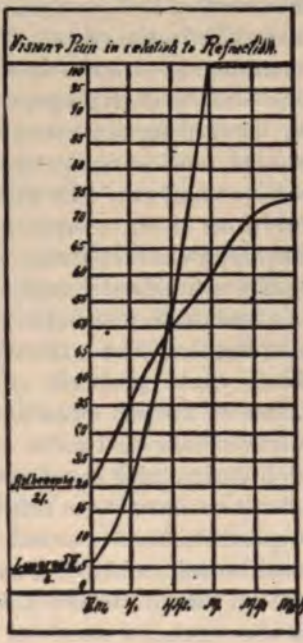
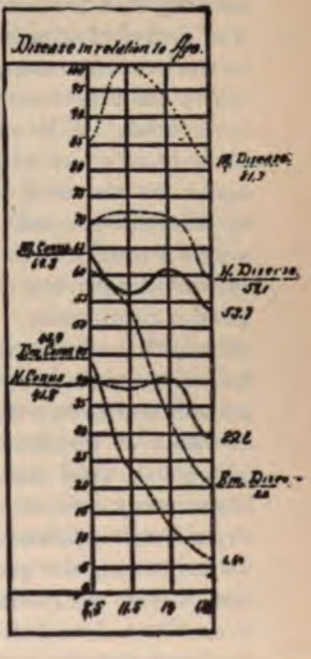


TABLE VI



In the presence of the facts revealed by these statistics, we are brought face to face with a problem of much greater complexity than we had at first anticipated. Starting, as we had supposed, to grapple with the hygiene of the school-room, we discover ourselves in conflict with a much broader question; one indeed involving not only a profound physiological problem, but also the problem of our readjustment to the requirements of an advancing civilization. In view of the facts which have been set forth, the conclusion is inevitable that our educational methods are not solely responsible for the resulting harm to the vision of our children. However faulty these methods may be, when viewed from the standpoint of the ophthalmic surgeon, the resulting injury is primarily due to the faulty construction of the eyes of a large number of the pupils committed to the care of the schools. The task before us is, therefore, not only to devise a faultless system of instruction, under hygienic surroundings as favorable as possible, but also to provide for some simple and systematic method of examination which shall determine the visual fitness of the child to enter upon the tasks which must be imposed. I am not unmindful of the possible objections which may be urged to this suggestion, but our educators would at least have performed an obvious duty to the child with faulty vision by apprising the parents of the fact, and advising that the eyes be subjected to scientific scrutiny and professional advice. One of the first duties of science is to aid in the physical adjustment of the race to the ever-increasing complexity of our modes of life. This is particularly the function of the science of hygiene, to which this convention is devoted. With every forward movement existing relations are disturbed and a new adjustment must be made, or the individual is ground under the wheels of the advancing car. In this country great changes in the customs and ambitions of the people have been wrought in a single century. The simplicity characterizing the mode of living which prevailed with the majority a hundred years ago, has given place to greater complexity. We look with justifiable pride upon our increase of wealth and the multiplication and expansion of our educational facilities, regarding them, quite properly, as evidence of national growth and prosperity, but we are too often unmindful of the sacrifice at which we purchase many of our best gifts. While we have in this advance secured untold luxuries, and great gratification of our ambitions, many serious difficulties have been introduced; dangers which we had not anticipated, perils unknown to our fathers. In order that we may enjoy the greatest benefit, and avoid the perils of our civilization, a wise readjustment to the new order of things is required, and in no other direction is there greater need for this, than in meeting the educational requirements of our time. The rapid increase of knowledge and its ready diffusion makes reading the almost universal pastime. For from ten to fifteen years, many hours daily, our children are confined to their work at school, and when the school tasks are accomplished for the day, they turn to books and magazines published for their especial entertainment. Given the large percentage of congenitally defective eyes, and this almost constant demand upon the organ of vision, and we have the factors which give a sufficient answer to the inquiry which we so constantly hear! What is wrong with our children's eyes? Why, we shall soon have them all in spectacles!

Briefly stated, it is but one of the numerous ways in which we are endeavoring to adjust ourselves to the new requirements. We insist upon acquiring an education and becoming a nation of readers. We are not models of physical perfection. Our eyes are unfortunately equally liable with other parts of the body to anatomical distortion, and the glasses, or "aids to read," are the crutches upon which we proceed. With many individuals the existence of these visual defects makes necessary a choice between no progress, painful and injured eyes, or glasses which are designed to correct the optical defects which result from these departures from the anatomical standard of the perfect eye.

The preceding statistics have demonstrated that the normal eye bears the strain of its duties quite as well as do the other organs of the body, the increased and unnatural strain to which they are subjected; but that when handicapped by some defects, are unable to keep abreast of more fortunate competitors, unless some artificial aid is supplied. In a word, when the demands of life more nearly approach a state of nature, even defective eyes are sufficient for the moderate demands made upon them, but, under the more severe requirements of a highly-cultivated community, the imposed strain is well borne only by the organ which approximates the ideally perfect eye. It becomes our plain duty, therefore, as sanitarians, not only to secure the best possible conditions under which the work of the schools is to be performed, but also to stand guard over those pupils who start out, ignorantly, with eyes unfitted by nature for their important task.

The question which naturally presents itself is, how are the defective eyes to be detected? The problem is not a difficult one, provided only that the coöperation of the proper authorities can be secured. The necessary appliances are few, inexpensive and very simple, and can be employed by the teacher at the beginning of each term of school year. But little skill and only a brief expenditure of time are necessary. All the apparatus required is a table of suitably graduated test-letters, a card containing words or letters printed in clear type of a standard size, and a yard-stick or measuring tape. Instructions for their use could be printed on the back of the card of test-letters. By these simple means the sharpness of sight for each eye could be rapidly determined for each pupil. The facts should be carefully recorded in a properly ruled book, which, if carefully preserved, would enable the proper authorities to trace the visual history of each pupil throughout his career in the public schools, and would thus become of great scientific value. Time does not permit me to do more than suggest the possible value of such a record in tracing the results of educational methods and various phases of school hygiene. The principle underlying the examination is very simple, and may be stated briefly as follows: The standard eye is in a condition of health, able to distinguish objects which subtend a certain angle. Experience has shown that certain letters of the alphabet are the best test objects, but only a few of them are admissible as fulfilling the required conditions. To be distinguished, the entire letter must subtend an angle of at least five minutes, while the composing elements of the letter must subtend an angle of one minute.

Hence, in order to determine the acuity of vision it is necessary only to require the pupil to name these standard letters when placed at the proper distance from the eyes. For example: The test-letter card usually employed has upon it letters which the normal eye can see at distances varying from two to three metres to sixty metres. The large letter marked lx should be as easily distinguished at sixty metres as the line of letters marked V at five metres. The letter chart being placed in a good diffused light, the pupil should be placed six metres, approximately twenty feet, from it, and required to name the smallest letters which can be called correctly, with each eye separately. In recording the results of the examination the distance, six metres, should be used as the numerator of a fraction and the line of letters he is able to read as the denominator. Thus, number vi, is called correctly, V =6-vi. Number xxx is seen V=6-xxx. Number lx only is called correctly, V=6-lx, etc. Or it may be recorded as 1-i, 1-5 and 1-10, of the normal acuity of sight. I submit herewith a blank form as a suggestion for the ruling of the record book of such examinations. Any pupil whose acuity of vision fell much below the standard for sharpness should be admitted to the class only after the parents had been apprised of the existing defect. Vision of 6-ix, or 6-xii, is almost certain to prove a disturbing factor in the career of the pupil.

Name of School, ...Section,..................
No.............Name..............Age,..........Sex,............
Complexion, ...Color of Hair,.........of Eyes,................
Condition of Health,..
Condition of Eyes, ...
Vision, ...O. D.,............O. S.,...................
Astigmatism, ...O. D. lines at.....O. S. lines at............
Accommodation, ...p. p. O. D.,....O. S.,................
Muscular Anomalies,...
Color Perception, ...
Ophthalmoscopic Examination... ....

One practical objection to the methhod suggested is the inability of the very young children seeking to enter the primary classes to all the letters, because of their ignorance of the alphabet. I am unable to suggest any other form of test object which at the same time meets the scientific requirements of a proper test. In such cases the examination could be deferred until the alphabet is learned. I had hoped that this would not prove an obstacle in the case of many children, but a brief inquiry of a few teachers in the primary schools elicited the somewhat surprising information that it was a rare exception to find a child who was familar with the alphabet on first entering the primary department of our schools.

THE RELATION OF THE CHURCH TO SANITATION.*

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Pastor First Presbyterian Church.

The wise man says:

"*A prudent man forseeth the evil and hideth himself: but the simple pass on and are punished.*"—Prov. xxii, 3.

The church is an assembly of Christians. The relation of the church to sanitation is therefore the relation of Christians.

A Christian is a man who accepts the principles of the Bible as the law of his life. A sanitarian is a man who aims to keep the body in health by perfecting its physical conditions.

Our question therefore comes to this: What is the relation between the christian and the sanitarian?

In the light of Egyptian history, it is too much to say that Moses was the first sanitary legislator.

In the light of Greek and Roman history, of the writings of Hippocrates, and the work of the civil engineers of the Eternal City, it is also too much to say that Moses was the inspiring leader of all sanitarians since his time.

But I think this can be demonstrated: That a christian ought to be a sanitarian. He ought to be at least where an obedient Jew was fifteen hundred years before Christ.

The principles of the Word of God will make the christian a sanitarian.

Take the reverence for the body that the Bible emphasizes.

The emphasis on this truth by the Old Testament is seen in its ceremonial code for the cleansing of eleven kinds of impurity, in its things allowed and forbidden in men's diet, and in the remarkable fact that so long as the people obeyed they were the longest-lived nation of the past.

The New Testament inherits the same emphasis.

The martyr father of origin used to kiss the breast of his sleeping child, saying with the profoundest reverence, "It is the temple of the Holy Ghost." The heart of christianity was in the act, for the sacredness of the body is one of its leading teachings.

While one school of contemporary philosophy was teaching that the body had no value, was to be pinched by voluntary fastings, bruised by whips and macerated by self-inflicted penances, and that the best men treated these things with indifference; and while another held that the body was to be put in the first place, and its needs to be met at all hazard, and its motto, "Let us eat, drink and be merry, for to-morrow we die," christianity was teaching that the body was to be held in honor and reverence, that men were to provide things needful for the body, not neglecting it with the Colossians, nor dishonoring it with the Romans: that the body was for the Lord, and the Lord for the body; that the body was the temple of the Holy Ghost; that men were to glorify God in their bodies, were to present them a living sacrifice; that the body of man was a holy and a sacred thing, and made forever hallowed by this: That God Himself condescended to take upon Him the form of a servant and to be made in the likeness of men.

This is the principle.

Now for its application.

If the bodies are so sacredly to be used, to be held in such reverence, the inference is clear and direct that every christian man will utilize every well-approved means to keep these bodies clean, pure and strong, and at their highest range of physical life. No means are better adapted to this end than pure air and in great abundance, pure water applied externally and internally, and digestible food well cooked.

These are the well-recognized sanitary forces to-day. And since sanitation means the setting in motion of all these forces, the enlightened christian will certainly be a sanitarian. His full reception of the principle of the sacredness of the human body will make him such. It must. There is no other issue.

A second principle that makes the christian a sanitarian. It is this: The following of the example of his Lord.

Let the christian think of his Lord's acts of healing. See how He here touched the leper, and there the blind man: here saying to the palsied man, "Arise and walk," and there to the devils possessing men and tearing children, "Come forth;" and how, wherever he went, he healed all that were sick of whatsoever disease they had.

And what will follow? This that has followed. The medical missionary will walk among the diseased and suffering heathen, and put upon them the touch of healing. And the christian at home will have the same spirit. He will yield to the inspiration of his Lord's example, and will take his stand for all things that heal the sick and cure the diseased. And this principle will carry him on from the effort to heal to the effort to prevent sickness. And hence, once show to the christian that such and such conditions of life forestall disease, and he stands for those conditions; that is, he becomes a sanitarian. He must. Again, the principle that makes him a healer makes him a preventer of disease.

Another principle makes the christian a sanitarian. It is this: The value of human life that the word emphasizes. In all clearness the Bible teaches that life is a sacred thing; that no man has a right to kill his brother or himself. "The Eternal has fixed His canon against self-slaughter." It condemns murder of all kinds and by all methods, whether by the poison of arsenic or the poison of the death-dealing germs that abound in the foul air, foul water and unwholesome food.

Saul, Ahitophel and Judas committed suicide by the sword and the rope. But not a whit more are they suicides than the man who knowingly puts himself in contact with the life-destroying conditions of pestilential swamps, of imperfect sewage, or of the fetid and deadly stench of filthy alleys, rotting garbage and the offal of slaughter houses.

Hence, show the christian such facts as these: That in Europe, in four years of the fourteenth century, the black death, springing from the filthy conditions of life, destroyed 40,000,000 people, and that now, by sanitary laws, this appalling plague has been banished from the continent; that in 1852, in Munich, the death rate from typhoid fever was twenty-four for every ten thousand, and that since the establishment of the hygienic laboratory there, and the sanitary legislation resulting, the death rate from this cause has steadily decreased until, in 1884, it was only a little over one for every ten thousand; that in England one hundred and twenty thousand deaths occur annually that might have been prevented, and 1,200,000 cases of preventable sicknesses occur; that the death rate in the Peabody buildings of London is sixteen per one thousand, and in the immediate vicinity it is over thirty per one thousand; that in Michigan it is estimated that one-half of the persons who sicken and die annually might have been kept in health by proper sanitary precautions; that in New York city the mortality is fifty-five per one thousand, when, if fitting sanitary conditions were created, it would be but fifteen out of one thousand, and that half the sicknesses annually come from filth; and that sanitary laws, strictly enforced, would practically add one-third to the population of any place by lengthening out the years one-third. Show these and similar educating facts to the christian, and he will first be astounded and horrified, and then he will set himself to establish the forces that prevent this awful and wicked degradation and waste of human life. He becomes a sanitarian. He is driven to this position by christianity's teaching of the sacredness and worth of human life.

Another principle of the word makes a christian a sanitarian. He is under the most sacred obligation to consider the well-being of his fellow man, physical as well as spiritual. He is his brother's keeper. Strong, he ought to bear the infirmities of the weak. "Noblesse oblige" is his law. He is to love his neighbor as himself. He is under the golden rule.

The christian in the first centuries felt this responsibility and acted upon it

St. Basil builds a hospital at Caesarea in the fourth century.

St. Cyprian, at Carthage, when in the midst of the plague the heathen were casting out their dead to rot in the streets, is organizing what is practically a sanitary commission.

The christian of to-day feels the same pressure in other than sanitary directions. He is building hospitals and establishing eleemosynary institutions of all kinds. And the same principle will carry him on to the standpoint of a sanitarian. Once show to him that the poison of unsanitary conditions is affecting the health and destroying the life of his brother, and this principle of responsibility for his fellowman's best interests will make him a sanitarian. The moment he sees that disease and death lurk in the drain or cesspool or garbage barrel he will strive to abolish these things. And as he does it for himself the golden rule will make him do it for others. The man's activity will be exactly proportioned to his knowledge.

Further, the peculiar aim of the christian will make him a sanitarian.

The aim is to found and build up the christian life in the soul.

There is the most intimate and interdependent relation between the body and the soul. And one of the greatest hindrances to effective christian work among the tenement population of our large cities is the filthy and disease-breeding conditions of their lives.

An earnest student of this problem of carrying the gospel to the masses, Prof. Blackie, of Edinburgh, tells us that "heathenism is caused and aggravated by crowded dwellings, want of ventilation and the means of cleanliness, by want of training in domestic economy, and generally by habits of thriftlessness and untidiness. And those who are concerned for the regeneration of these lapsed classes cannot but seek to assail these social evils, or to have them lessened by means of weapons which the civil authorities are able to wield against them."

And every christian who seeks to evangelize the people surrounded by these unsanitary conditions must stand with Prof. Blackie, and see that they are in the way of the efficient action of the moral and spiritual forces he is trying to bring to bear, and must also see the necessity of removing them if his aim is to be reached, and a symmetrical christian life to be built up.

In one word, the well-informed and wisely-working christian will recognize the interdependence of soul and body, and feel that he influences the most the first when he surrounds the second with the best possible conditions of life. He will say with Bishop Stevens, of the Episcopal Church: "Public morals are so interlaced with the general principles of sanitation, are so akin to purity of life, that whatever enlightens and instructs the people on the matter of public health will indirectly advance the cause of pure and undefiled religion before God, and in the light of men." He will say with Bishop Mallalieu, of the Methodist Episcopal Church: "One of the most important functions of christianity in the immediate future will be to prevent disease."

And he will catch the meaning of this experience of a sanitarian minister: "Twice of late have I been called to spiritually medicate poor souls who fancied that they had committed the sin against the Holy Ghost, but whom two weeks of careful diet, rest and good medical care released from the horror of that unpardonable sin."

The precedents of christianity in these days make a christian logically a sanitarian.

The christian is necessarily a philanthropist. Prof. Ely, of Johns Hopkins University, says: "A man who claims to be a christian and is not at the same time a philanthropist is a hypocrite and a liar."

Now, christian philanthropy may be remedial or it may be preventive in its action. Preventive philanthropy is gaining great prominence. It is establishing reform schools whose methods and influence are directed to prevent incorrigible children from becoming criminals. It is legislating against drunkenness by preventing the sale of liquors to minors. It is establishing school laws to prevent the children from growing up in ignorance; factory laws to prevent children from being dwarfed and diseased as they grow up from long hours and unsuitable labors. And other laws to compel manufacturers to fence in dangerous machinery, and railroad companies to use every means to prevent the loss of life.

I need not stop to specify other preventive measures of christian philanthropy. The point is this. The principle that originates these will originate all others that are needed. The past development of the principle commits the christian to stand for the same preventive measures in the matter of sanitation. Once convince a christian of the damage done by unsanitary conditions, and every precedent will make him a sanitarian.

The words of "Ecce Homo" will stand: "No man who loves his kind can in these days rest content with waiting as a servant upon human misery, when it is in so many cases possible to anticipate and avert it. Prevention is better than cure, and it is now clear to all that a large part of human suffering is preventable by improved social arrangements. Charity will now fix upon this enterprise as greater, more widely and permanently beneficial, and therefore more christian than the other. When the sick man has been visited, modern charity will go on to consider the causes of his malady. What noxious influences besetting his life, what contempt of the laws of health in his diet and habits may have caused it, and then to inquire whether others incur the same dangers and may be warned in time." Ecce Homo, 211, 212.

And now lastly. The christian's leading examples to-day makes him a sanitarian.

The leaders of christian progress are chosen of the Lord to a certain work. They stand alone in advance of their generation.

But the next generation comes up to where they stood.

The leaders of christian philanthropy are calling the Christian to-day to sanitary effort.

John Howard, the founder of modern philanthropy, calls. His sanitary work at Cardington changes it from the abode of disease and death from its surroundings, to one of the healthiest villages in England.

William Wilberforce calls. Nearly a hundred years ago he founded a "society for bettering the conditions of the poor," whose ruling aims were the prevention of sickness, poverty and suffering of all kinds.

Sydney Smith repeats the call.

Charles Kingsley also. A very prince in his advocacy of sanitary reform, and a brave battler with the diptheritic scourge that smote his village of Eversley, both curing the disease and removing the causes.

These are the men who, with their compeers, Arnold of Rugby, Robertson of Brighton, and Augustus Hare and Sir John Chadwic, and a host of others, found England a country where 30,000 or 40,000 people died annually from causes that might have been removed. And who, by introducing the forces, moral, legislative and personal, that removed the dead from the dwellings of the living, drained the cities, supplied pure water in copious abundance, tore down the old tenements and built new ones, lessened epidemics, increased the duration of human life, and made their native land, after Sweden and Denmark, the healthiest spot in Europe.

George Peabody calls. Giver of a million for the Peabody tenements in London. Florence Nightingale from Constantinople, and Agnes Jones from Liverpool.

And the calls of all these christian philanthropists are the calls of the leaders. They are the planting of the colors on the line where, sooner or later, all christians will take their stand. Their inspiring examples make the christian a sanitarian. They emphasize the word of Loring Brace in his "Gesta Christi:" "Reduced mortality from pestilence is due to pure religion begetting sanitary progress."

I conclude. The christian is under obligation to be a sanitarian, from the principles of christianity, from its aims, from its history and from its inspiring leaders in preventive philanthropy. There is but one thing he needs—education.

By educating the christian conscience, you have in the past made him an enemy of the lottery, of slavery, polygamy, of gambling and liquor selling.

Educate the conscience of the christian to-day, and you will have an enemy of foul air and foul water, and a supporter of all sanitary forces and laws.

Educate the christian and you will find him saying, with one of our profoundest students of social science, and in the deepest reverence: "It is as holy a work to lead a crusade against filth, vice and disease in the slums, and to seek the abolition of disgraceful tenement houses in American cities, as it is to send missionaries to the heathen."

THE HARMONIOUS DEVELOPMENT OF THE PHYSICAL WITH THE MENTAL POWERS.

By C. E. EHINGER, M. D., *of State Normal School, West Chester, Pa.*

The moral and intellectual nature of man has, from the earliest civilization been considered the chief object of training and development; and while we may seriously question the methods sometimes employed and results obtained, it is impossible to gainsay the interest and thought bestowed upon the problems involved in the attainment of intellectual vigor and moral rectitude.

In the days of simpler living, the question of the harmonious development of mind and body did not, from the condition of things, present itself, or at least with the same urgency, as it does to-day. The occupations, habits and environments of our forefathers were such as to make the question one of minor importance. But the ushering in of this new era of telegraph and railway, the increase of urban inhabitants, more intense competition, the eager scramble after wealth and position, with the high brain tension and general nervous strain accompanying, has wrought a wondrous change, and developed in America a nervous type of people presenting peculiarities quite unique in history.

Within the last decade so much has been said upon these phases of American character that it seems quite unnecessary to dwell upon them at length. Suffice it to say that among the competent observers it seems to be almost universally conceded that the present high-pressure mode of life in connection with the improper or over-education of our youth, is largely responsible for this unfortunate state of affairs.

I am aware that it seems to be rather the fashion of the day to decry our educational methods, and that it is equally the fashion in certain quarters to hold up the typical American as a lamentable wreck and fearful example of what misguided energy and mistaken ideas of success mean. I confess that an extended and exclusive study of the evils of our educational methods and the darker side of our social and commercial life presents a most startling picture, and one calculated at first sight to give anything but an encouraging view of our future. I do not wish, however, to array myself with that already too numerous class of criticizing malcontents and evil prophets who so delight in dwelling upon the weaker spots in our social fabric, and must at the outset disclaim all desire to be sensational in my remarks.

Sir William Grove justly remarks, "that civilization begins by supplying wants and ends in creating them, and each new supply for the newly-created want begets other wants, and so on."

We congratulate ourselves upon the prodigious strides which we have made during the present century, and point with pardonable pride to the almost miraculous achievements wrought by means of the successful utilization of steam and electricity; but we seem to forget that these changed conditions, this supplying of wants, has induced others which we have not as yet sufficiently regarded.

With the higher cerebral development, more finely organized nervous systems, there necessarily follows greater danger of disturbance of the delicately adjusted organism, and as a result a whole list of new maladies confront us that demand relief. Without asserting that the intellectual and moral sides of us have been given all the attention they should, it is, at least, not saying too much to declare that the third principle in this great triune which constitutes the human being has received proportionately less attention, and is at present the weak member.

To what extent these evils are to be accounted for by climatic influences I am not prepared to state. Nor do I believe it possible for any one to answer with certainty, though there seem to be numerous and excellent reasons for supposing this to be a potent factor in the case. S. Weir Mitchell, in his admirable little treatise, "Wear and Tear," was, I believe, one of the first to call attention to these points. In the first edition of his work, published in 1871, he dwelt at some length upon this matter of our climatic peculiarities, and insisted that it accounted for much of the so-called "American nervousness." In the fifth edition, published fifteen years later, he found no reason to change these views, but on the contrary had seen much to strengthen his belief. While more extended observation is necessary to give full credence to this theory, we find even now much to confirm it, and believe it is by no means one of the least factors in the problem, though it is, perhaps, the only one which is entirely beyond our control. Still, a general recognition of this fact might do much to alter our methods of living, and so induce us in the best manner to adjust ourselves to the existing conditions.

A fitting prelude to what is to follow may be the quotation of a paragraph from Dr. Mitchell's little treatise explanatory of his title: "Wear," he says, "is a natural and legitimate result of lawful use, and is what we all have to put up with as the result of years of activity of brain and body. Tear is another matter: it comes of hard or evil use of body or engine, of putting things to wrong purposes, using a chisel for a screwdriver, a penknife for a gimlet. Long strain or a sudden demand of strength from weakness causes tear; wear comes of use; tear of abuse."

It is just this "putting things to wrong purposes" which has wrought such havoc with the mental and physical well-being of our American people. The boundless opportunities, the unfettered customs and climatic stimulus have made America and Americans the wonder of the world; but this rapid and resistless march has only been made at great sacrifice, and the time has arrived when it behooves us to slacken our pace and count well the cost of such advance in the future.

The apparently disproportionate increase of nervous affections among Americans makes the subject of the "harmonious development of the physical with the mental powers" one of peculiar interest and paramount importance. To say that nervous diseases are on the increase is but equivalent to saying that we are degenerating physically; and that one side of us is being overused, exhausted and perverted to such a degree that Dame Nature sounds a warning note with no uncertain voice.

Nervous exhaustion, hysteria, insanity, chorea, epilepsy, heart failure and kindred affections tell the story only too plainly. But where shall we begin to correct the evils, and what is the remedy? The question is one of such vital moment that to attempt to answer without the most searching inquiry and profound thought seems but a presumption. Broadly speaking, the answer lies in the one word "education." Such generalisation however, signifies but little, therefore to be a trifle more specific, there seems reason to believe that the prefixing to this great term of the adjectives "judicious physical" would be contributing a suggestion worthy of trial. Since the physical is prior in order of development reason would seem to demand that we grant it the foremost place in education.

A suggestive writer has said: "The first requisite to success in life is to be a good animal," and Herbert Spencer pithily adds, "and to be a nation of good animals is the first conditon of national prosperity." How to become "a good animal" is clearly a question which greatly concerns the American of the future. If we are to remedy the evils noticed, arrest the tendency to physical deterioration, we must look to this "first condition of national prosperity." In the words of Dr. Nathan Allen, this will be: "When our educators become thoroughly convinced that physical development as a part of education is an absolute necessity—that a strict observance of the laws of physiology and hygiene is indispensable to the highest mental culture—then we shall have vital and radical changes in our edcational system. The brain will not be cultivated so much at the expense of the body, neither will the nervous temperament be so unduly developed in proportion to other parts of the system, often bringing on a train of neuralgic diseases and exposing the individual to the most intense suffering which all the advantages of mental culture fail not infrequently to compensate. * * * The whole system of education, especially in early life, must be based more and more upon the systematic training and development of the body. * * * Then, in all matters pertaining to mental improvement, to the progress of society, to every phase in civilization and the various developments of christianity, the sanitation of the body and of the mind must be paramount to everything else."

The powers of the human system must find expression through two great channels, the muscles and the nerves; and in proportion as these mediums are perfectly developed and harmoniously related is our power enhanced or retarded. Perfect adjustment, the even balance of the co-ordinate functions of nervous and muscular systems is what we term health; any deviation from this balance we characterize as disease. The interference with or preponderance of either nervous or muscular power results in abnormal sensations in disease. The demands of modern life place undue stress upon the nervous energies, and we habitually disregard that proper adjustment so essential to growth and perfect nutrition. The interdependence of mind and body seems not to be recognized, or if recognized almost wholly disregarded. It is strange, notwithstanding what has been said and written on the harmonious development of mind and body, from the time of Pluto to the present day, that even now in practice and the course of ordinary thought, we persist in considering mind and body as independent principles, not answerable to the same laws, and in a measure antagonistic in their nature and development. Our literature is overflowing with maxims concerning the maintenance of health, such as the often quoted one: "A sound mind in a sound body." The final injunction of departing friends to "Take good care of yourself," is but a popular attestation of at least a superficial knowledge of the importance of a healthy mind and body. But our disregard of these maxims is as total as maxims are numerous. The preservation of health, hygiene, we have known but as a name. Listen to what that eminent authority, Dr. Parkes, has to say of it: "Taking the word hygiene in the largest sense, it signifies rules for perfect culture of mind and body. It is impossible to dissociate the two. The body is affected by every mental or moral action; the mind is profoundly influenced by bodily conditions. For a perfect system of hygiene we must train the body, the intellect, and the moral faculties in a perfect and balanced order." On the fatal tendency of this prevailing evil of looking upon man as a two-fold nature, the compônents of which are in constant antagonism, let me quote the pregnant words of that greatest of physical educators, Archibald Maclaren: "For there is no error more profound or productive of more evil than that which views the bodily and the mental powers as antithetical and opposed, and which imagines that the culture of the one must be made at the expense of the other. The truth is precisely the reverse. * * * Mind and body should be viewed as the two fitting halves of a perfect whole, designed in true accord mutually to sustain and support each other, and each worthy of our unwearied care and unstinted attention, to be given with a fuller faith and more reverent trust than they have who would argue that He who united us in our two-fold nature made them incompatible, inharmonious, opposed. No, no! even blind and blundering man does not yoke two oxen together to pull against each other. Mind and body can pull well together in the same team if the burden be fairly adjusted. * * * They seek to sever what were bound together in the very planning, if one may so speak on such a subject of a living man; they disunite them and complain that the dissevered halves are of unequal value; they take the one and cultivate it exclusively, and neglect the other exclusively, and then make comparisons between them; forgetting that their fitness, each for the other, lay in the fair nurture of both, and in their mutual cultivation."

The opinion of competent authorities on the value and need of physical training is well summed up by Dr. Hartwell, of Johns Hopkins University, in the following words: "It seems to me evident that muscular exercise deserves more attention than educators in this country have ever been willing to give it, and that when properly chosen, regulated and guided, it makes a boy into a better man, in many respects, than his father was, and enables him to transmit to his progeny a veritable aptitude for better thought and actions. Herein lies the power of the race for self-improvement, and the evolution of a higher type of man upon the earth."

Physical educators, specialists in various branches, and intelligent people generally, who have taken the time, and had even moderate advantages for experiment and investigation, are fully awake to the necessity of introducing some rational system of physical culture into our schools. But school authorities seem slow to appreciate its importance, and where the subject is given any consideration it is usually dismissed on the score of cost. The most progressive and intelligent of our educators show a disposition to accept the verdict of sanitarians that the lighting, ventilation and drainage of school buildings *must be the best, regardless of cost*, and that in the end the expense is insignificant as compared with the incalculable saving in sickness and loss of life. Now let them devote a little attention to this other phase of sanitation, and in a few generations we will cease to deserve the oft-repeated saying that we are a nation of dyspeptics and neuraesthenics.

The really strange thing about this matter of physical culture is that it should require any argument to demonstrate its need and immense value when properly employed, and the wonder is still greater that it should need any defense among intelligent people. Yet its introduction is most frequently opposed with a bitterness quite surpassing comprehension. The consensus of opinion of those who have seen it fairly tested, and among the abler members of the medical profession, is so overwhelmingly in its favor as to make its tardy introduction seem well-nigh incredible. The abuse of gymnastics and athletics is too frequently brought forward as an argument against physical culture, but this is on a par with the railings of some misguided persons against the church because it is sometimes used for worldly or unworthy ends.

I do not believe there is to-day in America a single prominent teacher of physical education who is not combating with all his power the abuses which have crept into gymnastics and athletics, and discouraging the tendency to specialism and professionalism. Let any one read the papers annually presented before the American Association for the Advancement of Physical Education, or those presented at the recent Physical Training Conference at Boston, and then judge. Nothing will give a better idea of the character of the men and women who are devoting their life's work to this "new profession," and of the work they are endeavoring to do, than a careful perusal of the many scholarly and practical papers presented at these meetings.

But there is another side to the subject which is well worthy of serious attention, and which has not received a tithe of the consideration it deserves. The educational value of physical culture—aside from mere muscular development—has not been appreciated. To set the point clearly before you, let me quote a little from an address delivered at Berlin, in 1881, by the eminent physiologist, Dubois Raymond. He says: "By exercise we usually understand the frequent repetition, seconded by the aid of the mind, of some more or less complex action of the body, for the purpose of attaining perfection in that exercise, or, it may be, the exercise of the mind alone. In physiological text-books we generally seek in vain for information upon exercise, and if any is vouchsafed at all, it is with regard to bodily exercises, and these are considered solely as exercises of the muscular system. Now, it is of course true that for such exercises as gymnastics, fencing, swimming, riding, dancing, skating, etc., a certain degree of muscular force is requisite, but we may very well imagine an individual with muscles like the Farnese Hercules, and yet unable to either stand or walk. This we see when we deprive him of the power of regulating and co-ordinating his movements, by giving him chloroform or making him drunk. It is plain, therefore, that every motion of the body depends, not so much upon the force of the contractions of the muscles, as upon the harmony of their action. * * * Since the nerves are merely organs for the conduction of impulses originating in the motor-cells, it follows that the actual mechanism of every complex motion must have its seat in the central nervous system. * * * All species of bodily exercises, therefore, are not simply muscular gymnastics, but nerve gymnastics, too."

To again quote Dr. Hartwell: "The functional improvement of the nervous mechanism which represents any movement, whether it be simple or complicated, reflex, automatic or voluntary, is the most important effect of muscular exercises; or, in other words, muscular training which fails to develop brain power falls short of its aim."

We seem to forget that the mind acts through a material organ; that all mental processes depend upon the harmonious development and perfect integrity of the brain. We recognize in a loose way that the exercise of the brain involved in education results in strengthening and amplifying the mental powers; in short, in growth of the brain. Every well-informed person has learned that the brain in civilized races is larger and more perfectly developed than in savage races. It is less obvious, however, or at least more generally over-looked, that the brain is not the exclusive seat of intellect, or perhaps better, that it is not occupied wholely or mainly with thought, volition and with emotions. It is in reality as indispensable an organ for the performance of voluntary movements as for the more purely intellectual processes. Every movement—not reflex—brings it into action.

The influence of sensory and muscular impressions upon the brain is so great that it demands some special attention. Different sensations are received, interpreted and recorded in different portions of the brain. This greatest of the nerve centers may be likened to a collection of organs rather than a single one. Every portion, or each subordinate organ, must receive its proper development, or failing to, affects the general symmetry. Not only does it influence the portion neglected, but indirectly the whole brain by reacting injuriously upon the other portions.

Every exercise of a muscle re-acts upon the nerves and nerve centers with which it is in connection, producing a change in the cells and fibers. Each repetition of such a movement increases the facility for originating and transmitting stimuli. While such changes are not visible to the eye, as in the case of the muscle, it is highly probable—yes, almost certain—that the changes which take place in the grey matter of the brain, for the purpose of inducing muscular action, influence the nutrition of the portion of the brain involved quite as markedly as contraction of the muscle influences its growth.

Luys and other observers have recorded observations which seem clearly to substantiate the foregoing conclusions. It has been found that the amputation of a limb causes certain parts of the grey matter of the brain to gradually undergo atrophy, and that the cessation or diminution of certain movements also causes the same result in those centers which control the movements. It seems, therefore, naturally to follow that portions of the brain which control voluntary movements are developed just as certainly by muscular action as other portions of the brain which preside over the intellectual operations are by mental exercise.

We may sum up those conclusions in the physiological law that "function makes structure," and the corollary added by a recent writer, "the cessation of function leads to the disappearance of the structure."

There is a striking analogy between the muscular and mental work; the same physiological laws govern nutrition and activity of both muscular and nervous tissue. Every voluntary bodily exercise involves a two-fold expenditure of force: that of the muscle in contracting, and that of the brain in animating the contraction, thus warranting the saying that "the brain works when the body acts."

Who can fail to see the important bearing which the application of the advanced but generally recognized principles of physiology may have on our educational methods. The appreciation of these truths, perhaps empirically at first, accounts for the increased popularity of object teaching, the kindergarten and manual training systems. It is the application of the same principles in slightly different fields which is creating so much interest and producing results surpassing the most sanguine expectations in the training of our defective classes. Feeble or deranged minds, stunted and perverted moral natures, find their most ready expression, if not their sole cause, in abnormal bodies and undeveloped or irregularly developed cerebral structures.

The result of experiments undertaken in the state reformatory at Elmira, New York, to determine the effect of systematic physical culture upon the criminal dullard furnishes eloquent pleas for the more general adoption of this humane, rational and eminently successful method. Mere restraint and appeal to the emotions of the criminal can do but little to abolish crime. Valuable as physical culture is in this sphere it is not, however, so much in the light of a corrective measure as it is prophylactic that it should be regarded, and here it goes hand in hand with sanitation of which it is, indeed, a branch.

I touch upon these phases of the subject because they are comparatively new and somewhat different from the generally implied results of muscular training, though they are in perfect accord with what has been accomplished in the department of education to which physical culture has heretofore been assigned. The direct effects of exercise upon the muscular system are so obvious that it seems hardly worth the while to enumerate them to an assembly of this character.

I can hardly do better in closing my remarks than to quote the testimony of Amherst College, since it was the pioneer in physical education. The following is from a collection of Dr. Nathan Allen's essays on physical development. Dr. Allen, himself a graduate of Amherst, took a leading part in the introduction of physical education in that institution, and has been styled the godfather of this department. He was a trustee, and for over twenty years served on the gymnasium committee The doctor's life-long study of physical culture and degeneracy, hygiene, heredity and kindred topics, eminently qualifies him to speak with authority on the subject under consideration. I refer mainly to that portion of his remarks bearing upon increased health of the students. He says: "It can, we believe, be safely stated that no large literary institution in this country or Europe, has for a quarter of a century conducted physical education so successfully and so thoroughly as this college. One of the secrets of this success has been that the department, at its very start, was placed upon high ground; was treated with an importance and character equal to the classics or mathematics; and like these, its exercises were made obligatory, and its results, like these also, entered into the merit roll of every student. But a stronger argument still, was that the students themselves became from year to year so convinced of the great advantages of their physical exercises.in improving their health and perfecting their scholarship, that they would not give up on any account. * * * A careful account has been kept every year of the sickness or loss of time from every kind of complaint of the students, and it has been found to be steadily diminishing; but what is more striking, less and less in each class. The freshman class have the most, the sophomore not so much, and junior still less, and the senior the least of all. Thus, year by year, each class steadily improves in health, showing the immediate benefits of such exercises. This is the reverse of what occurred thirty, forty and fifty years ago."

This is strong evidence, and the schools and colleges throughout our country can make no mistake in following the example of Amherst.

When our educators come to realize the importance of physical education in its larger sense; when they look carefully to the proper lighting, heating, ventilation and drainage of the school building; when they minimize the worry and strain incident to examinations, limit the hours of admission, hours of study and number of branches pursued; exercise a general care over the pupils' health by appointing medical inspectors; in short, when they watch over and educate the *whole child*, we shall have made a long stride toward the harmonious development of the physical with the mental powers.

ON THE NECESSITY FOR THE EARLY DIAGNOSIS OF COMMUNICABLE DISEASES AND THEIR IMMEDIATE REPORT TO THE HEALTH AUTHORITIES.

By PEMBERTON DUDLEY, M. D., *Member of the State Board of Health of Pennsylvania.*

Historical references to the communicable diseases in their various forms run parallel with the history of the race and almost co-extensively with it. Marked, as these diseases were, in times past, with a malignancy unknown in our day—sweeping the fair earth as with consuming flames, and carrying black death and frightful disaster to families and cities and nations—it is little wonder that men turn away in horror from the perusal of their history, and shudder at the thought of what our modern world has escaped, and escaped so narrowly.

Yet the history of the world's epidemics, rightly read, is both interesting and instructive. Interesting, in that it shows from what a depth of darkness the knowledge of pathology and sanitary science has lifted us; instructive, as exhibiting the fact that men, always and everywhere, have acted, in reference to these diseases, in a manner consistent with their own conceptions regarding their nature and causes, and which we, with all our present enlightenment, must respect as rational, however misjudged and misdirected we now know it to have been. If the ancient methods of dealing with a plague were absurd, it was because the cause and quality of the malady were either wholly misunderstood, or, if understood, were found to be beyond the control of the scourged inhabitants. If fathers and mothers fled in affright from their infected children, if unguided or misguided children walked into scenes of peril, if men and women stood still and waited in listless apathy for the coming of inevitable death, it was because that death was hurled upon them by the gods whose wrath they could not conciliate and whose power they could not oppose—a comet or a planet whose course they had no means to control, or a demon whose malignant purpose they could not thwart. In the light of their knowledge, or utter lack of it, we may say that their methods and measures were futile, but we dare not call them irrational.

And what of ourselves? Knowing, as we do, or as we might, all about the communicability of scarlet fever, we take our children by the hand and deliberately lead them into the presence of pestilential death, to bend above the peril-environed form, perhaps to kiss the death-laden lips, and, when they, too, are laid low, to seek comfort in the almost blasphemous thought that we suffer under the will of Providence, and go out to invite our neighbors' children to the funeral. When we—and there are a hundred thousand of us in this enlightened commonwealth to-day—when we, either through ignorance or perversity, are capable of thus wantonly sacrificing our own and our neighbors' children, is it not high time that some authority shall step between us and our purpose, and, with the strong hand of law, prevent its consummation?

To modify the old proverb a little: "Familiarity breeds contentment." Even in our enlightenment we tolerate numerous evils that, but for our daily familiarity with their presence, would be mercilessly suppressed, and communicable disease at least in some of its forms, is one of them. It is inconceivable that a thoughtful people could otherwise meet, face to face, upon their streets and in their public conveyances, a foe that daily and hourly threatens their dearest interest and their own lives, and not make most determined efforts to vanquish it.

But, really, can these communicable diseases be thus contended with and conquered? As regards at least some of them the question is easily answered. During the sessions of this convention there have been assembled here many of the most distinguished sanitarians in the United States, any one of whom will tell us that even with our present knowledge an epidemic of Asiatic cholera or of yellow fever, of typhoid fever, of scarlet fever, of diphtheria or of small-pox need not be. They can be prevented or else arrested in their course always. In certain countries of Europe to-day small-pox is practically unknown. Why? Simply because the governments of those countries have determined not to tolerate it During the year ending November first, 1889, the State Board of Health of Pennsylvania was called upon to combat more than a quarter of a hundred epidemics of various forms. With the counsel and aid of distinguished sanitary experts, located here and there throughout the commonwealth, the board, in the brief time required to obtain control of the circumstances, defeated and stamped out these epidemics in every instance. Other boards of health, state and local, are meeting with like uniform success If an epidemic can be arrested at its one-hundredth case, why not much more easily at its first case?

But the prevention or suppression of epidemics cannot be accomplished by preaching or by teaching, or by the administration of medicine (though all these may be effective auxiliaries), but by legal authority, and by legal authority backed and supported by a hearty co-operative public sentiment. Here we may be wise to remember that public sentiment is composed of a large number of private sentiments. If what we have said respecting the suppressibility of epidemics is true, then, while an invasion of disease may be a misfortune, an epidemic is a crime. And what more appropriate than that a crime should be dealt with by legal authority?

There are probably few occasions arising in connection with the administration of government, when there is greater necessity for the exercise of large powers and for prompt and vigorous action than in the presence of an outbreak of a serious and virulent epidemic. In the face of so grave a public danger, no temporizing and no half-way or half-hearted measures can be considered. Ineffective sanitation is no sanitation. The gate half closed might as well be wide open. Doubtless it is this view that has prompted our legislature to vest such broad powers in the hands of our health authorities, knowing that without it their efforts for the public defense must fail of success.

But if the action of the health authorities must be prompt in order to be effective, it follows that those whose duty and interest it is to secure this action must be equally prompt. Just here it is that health officers, left without public co-operation, find themselves almost powerless. Here it is that they are compelled to rely upon the wisdom and fidelity of the physician, in order to obtain prompt and accurate information upon which to base their action.

The importance of an early diagnosis, with a view to an early official report, of a case of grave communicable disease, can hardly be overstated. And this we say, notwithstanding the involved liability to make even serious mistakes in diagnosis. I am not unaware of the fact that physicians are frequently subjected to vexatious and expensive lawsuits, and sometimes mulcted in heavy damages, because of a false diagnosis leading to the isolation of a patient in a small-pox hospital for what has afterward proved to be a case of measles. And I also know that the fear of such a sequence has induced many a physician to withhold a final and formal diagnosis a whole day or even longer, to the increased jeopardy of the community. But it is quite likely that as the necessity for prompt action on the physician's part becomes more generally recognized, law will provide more ample means for his protection in the exercise of this high public duty, while at the same time the safety of the unfortunate subject of his possible mistake will be absolutely guaranteed.

It may, perhaps, be asked, wherein consists the necessity for reporting a case of infectious disease to the health authorities at all, except in cases intended for removal to a hospital? Well, there are several reasons why such reports should be made. First, because the case is a public menace, and the authorities ought to be informed of the exact location of every such danger point even though it may not be necessary to take any action thereon. Secondly, because the physician may need the moral support of a law officer to enable him to secure compliance with his sanitary orders Patients and their friends are sometimes not only ignorant, but likewise perverse. Thirdly, because in every densely populated community there are those who are unable to apply, or even to obtain, the means necessary for the proper sanitation of the premises. Fourthly, because it frequently happens that not only the premises occupied by the patient, but those of his neighbors, together with the surrounding streets, lanes, etc., need the attention of the sanitary officers. Fifthly, because upon the subsidence of the disease, the proper disinfection of the house and its contents may require the direct supervision of a sanitary expert.

Such are some of the reasons, and others of scarcely less importance might be added, why all cases of grave communicable disease should be reported to the health officers as soon as possible after their nature is ascertained. It is a first and absolutely necessary step toward the prevention or suppression of an epidemic of communicable disease.

THE COMMUNICABILITY OF CONSUMPTION.

By BENJAMIN LEE, A. M., M. D., Ph. D., *Secretary of the State Board of Health of Pennsylvania, of Philadelphia.*

There are certain questions which can only be successfully studied on a grand scale. A few scattered experiments here and there, the observations of this or that physician in the limited field of his own practice, are entirely inadequate to afford a solution. Such a one, for example, is the controversy between vegetarians and those who advocate the use of a partly animal diet. We cannot take the experience of one individual, or even of a number of individuals, and feel satisfied to deduce a rule of life from it, which shall be of general application. To solve this problem, we must note the effect on the entire races of men, during periods of centuries. The question is not—Does this or that man who abstains from the use of meat, enjoy as good or better health, than his omniverous neighbor? but—Do those nations which live principally on cereals and vegetables furnish as fine types of manhood, physically, intellectually and morally as those whose diet contains a considerable proportion of meat? So in regard to this question of the "communicability," for I prefer this word to the one in common use, "contagiousness, of consumption,"—one doctor will bring up forty cases in which the disease has appeared in the families in his practice and has not spread to other members of these families. Another, equally well-informed and reliable, will adduce forty other cases in each of which he was able to trace direct communication of the affection. Neither of these men will convince us. There are so many side issues in each direction that a tolerably plausible argument can be made either way. To obtain a really crucial experiment we must compare races, not individuals. Such a comparison has been made. Centuries ago consumption was a very common disease in the north of Europe and especially in England, as it is to day. It was a very rare disease in the south of Europe, along the shores of the Mediterranean and especially in Italy. As means of travel began to multiply, the victims of the disease sought refuge, in constantly and rapidly increasing numbers, on the warmer side of the Alps, the Apennines and the Pyrinées. This afforded an opportunity for observation on a large scale. Did these health seekers bring with them the seeds of a disease not indigenous to any extent to the country in which they took refuge? The universal experience of people and of physicians gave an affirmative answer to this inquiry. The practical result of this conviction was the insistence on the part of the people, the profession and the authorities, on certain precautions in regard to intercourse with consumptives, and the most rigorous system of disinfection of apartments, which had been occupied by them. To such an extent was this practiced that it became a most serious annoyance to the sufferers and their friends. The result was that so greatly was the threatened spread of the disease among the nation checked, that eventually a sense of security was bred, which, together with the immense influx of northern travel and the preponderance of British medical opinion, always averse to this belief, gradually led to an abandonment of these precautions to a considerable extent. This fact does not destroy the value of the experiment however, which remains an historical fact. Meanwhile the subject has been studied from a different standpoint entirely. The investigations of that patient and careful germ-hunter, Koch, have convinced three-fourths of the physicians of the civilized world that the bacillus tuberculosis is the essential cause of consumption, and that the dried and pulverized sputum, or expectoration, of the consumptive is the means of its propagation and transmission. This discovery will so far modify medical belief within a few years, that the new and more scientific precautions which will be taken will prevent us from ever knowing to what extent the relaxation of the restrictions formally prevalent in Italy have led or would have led to a dissemination of the disease among her native population.

Meanwhile our duty is to ourselves. We must use every possible precaution to keep the air of our homes and of our streets free from the presence of those little germs which have the power of working such terrible havoc in our lungs if we breathe them in. To accomplish this our aim must be to prevent them from ever becoming dry until they are destroyed. They are formed in the lungs of the consumptive and pass out not with the breath but with the sputum or spit. Hence the consumptive must be instructed never to spit where the expectoration may become dry and thus liberate the germs, that is to say on the ground, or pavement, or the floor, or on his handkerchief. The cuspidor or cup which he uses should always contain water and if a small quantity of disinfectant is added to the water, so much the better. If he is well enough to go about, he should carry in his pocket a little flask for the purpose of receiving the sputa, in which a small quantity of disinfectant has been placed. There is one especially constructed for the purpose. It has in it a little cologne water. If you will examine you will see that it is so constructed that the water cannot escape no matter in what position it is held. There is a cap on either end. The receiving end is made with a wide mouth and the cap is simply held in place by a slight spring. You observe that as I open this cover and turn the flask up side down, not a drop of the fluid can escape. The other end is made with a much smaller opening and is stopped with a cork over which is screwed a metallic cap making it air tight. This end is used only for the purpose of emptying and cleaning the flask. In his own house the patient should have a cuspidor smaller at the mouth than below, so that the sputa cannot dry upon its sides, in every room in which he passes any considerable portion of his time. And, as already said, these cuspidors should never be allowed to become dry and should be supplied every day. If confined to his bed it will be well for him to be provided with the stiff paper cups which are now made for the purpose and which can be burned or otherwise safely disposed of when used. I have brought a few of these for distribution. If these can not be obtained, a few thicknesses of newspaper folded into a cone and nicked on the edge will form a very satisfactory substitute.

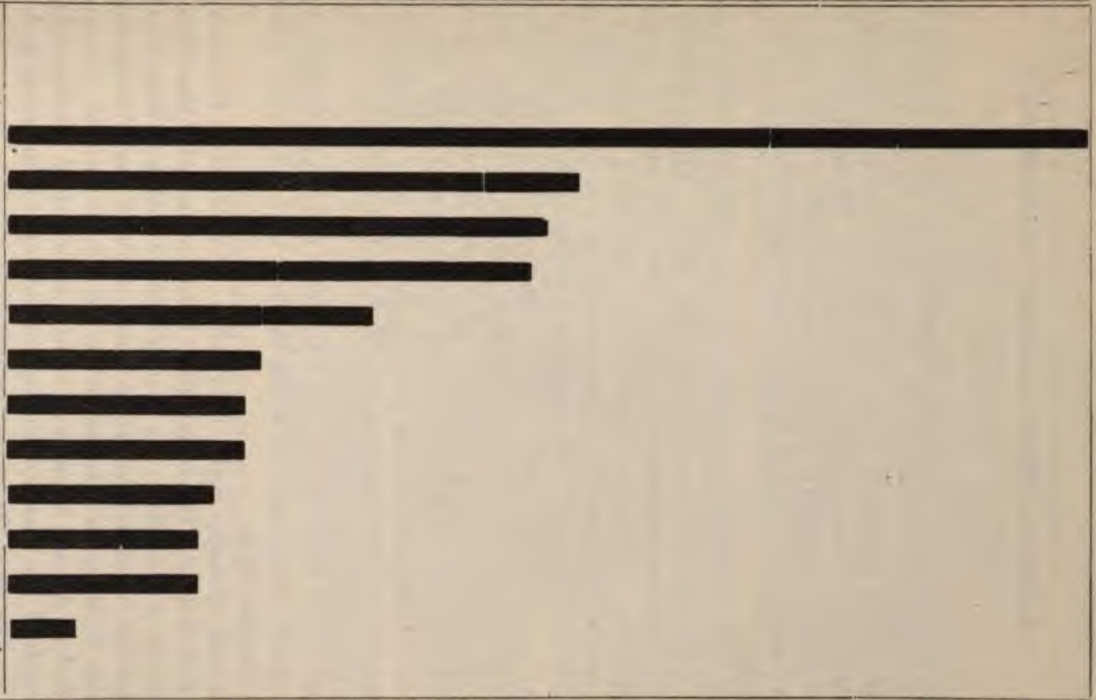
APPENDIX F.

CIRCULARS AND FORMS.

1. **Precautions against Consumption.**
2. **The Dangers arising from Public Funerals of those who have died from Contagious and Infectious Diseases.**
3. **The Disposal of the Sewage of Public Edifices.**
4. **Precautions to be adopted by Funeral Directors to prevent the spread of Contagious and Infectious Diseases.**

DIAGRAM SHOWING THE COMPARATIVE MORTALITY *by Absolute Number of Decedents from Twelve Prominent Causes of Death During 1886, in Reading, Pa.*

CAUSES OF DEATH.	
CONSUMPTION, ...	105
Pneumonia, ...	53
Heart disease, ...	47
Infantile diarrhœa, ...	44
Marasmus, ...	30
Apoplexy, ...	24
Croup, ...	22
Typhoid fever, ...	22
Cancer, ...	17
Diphtheria, ...	16
Scarlet fever, ...	16
Malarial fevers, ...	4
	400



1—PRECAUTIONS AGAINST CONSUMPTION.

HISTORY AND NATURE OF THE DISEASE.

Consumption (also known as pulmonary consumption, phthisis, pulmonalis, phthisis or tuberculosis of the lungs, lungenknoten, lungentuberculose) is supposed to be the cause of about one-seventh of all the deaths in cold and temperate climates.* In the State of Pennsylvania it causes, certainly, more than one-eighth. That this estimate is a very moderate one will appear from the following figures which are official:

In the city of Reading, during the year 1886, the total number of deaths was eight hundred and sixty-one (861). The number of deaths attributed to consumption during the same year was one hundred and five (105), but it must be remembered that many deaths recorded as from pneumonia occur in consumptives, as a result of the diseased condition of the lungs. The number attributed to pneumonia during the year was fifty-three (53). The accompanying diagram showing the comparative mortality of consumption, and eleven other prominent causes of death in that city for the same year, is very suggestive.

In the city of Philadelphia twenty-one thousand seven hundred and nineteen (21,719) deaths took place in the year 1877. During the same year there were two thousand nine hundred and twenty-three (2,923) deaths recorded from consumption.

In the city of Erie, during the year 1886, five hundred and sixty-nine (569) deaths took place, of which seventy-four (74) were reported as due to consumption

This fatal scourge seeks its victims by preference from persons in the prime of life. The father, the bread-winner for the little brood growing up around him, the young mother with a babe at her bosom, these are the valuable lives which succumb most readily to its insidious advances. Could its ravages be stayed what immense periods would be added to human existence! How great would be the addition to the wealth of the state! What an untold sum of suffering and misery would be eliminated from the history of daily life! Recent discoveries and experiments lead us to hope that such a result may be measurably obtained. This hope depends upon the now thoroughly established facts that, in every case of consumption there is present in the lung a minute organism or germ of the kind known as bacillus, hence called the bacillus of tuberculosis, that the introduction of this organism into the system will produce consumption. Hence the inference that if we can keep this bacillus out of the lungs in any given case, we shall prevent that individual from having consumption. It becomes, therefore, of the utmost importance that we should understand

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* The recent report of the pathologists of the board of health of the city of New York places it as high as one-fourth of all deaths of adults.

HOW THE DISEASE IS SPREAD OR ACQUIRED.

In other words how the bacillus finds its way into the system. It may enter through the stomach, in consequence of the flesh or milk of animals having the disease being used as food. This source is comparatively rare, and, as prolonged high temperature kills the germ, if we cook our food thoroughly we shall run no risk of becoming infected in this way. The grand source of danger which we have to guard against is the expectoration of the consumptive, the matter coughed up from the diseased lung, the spit (called by physicians the sputum, plural sputa). This expectoration swarms with these miscroscopic organisms. Their tenacity of life is very great, and as long as they retain life they are capable of reproducing their kind in the lungs of a healthy person. Drying does not in the least impair their vitality. When the expectoration dries, it rapidly becomes pulverized, and then these germs float about as fine invisible dust in the air.

So long as the bacillus itself remains moist, and in contact with a moist surface, the danger of its finding its way into the air is extremely small. The surface of the air-tubes and the air-cells of the lungs being always moist, there is, therefore, little probability that the bacilli will pass out in the breath of the patient.

It follows from this that if the precautions hereinafter suggested are carefully observed, no one need feel the least anxiety in nursing a consumptive, even in the last stages of the disease.

PRECAUTIONS WITH REGARD TO CATTLE.

First. There should be a most rigid system of inspection of cattle and meat under competent authority.

Second. Such laws should be enacted as would secure the infliction upon persons who knowingly sell tuberculous meat or milk, of penalties equally severe with those which are imposed for any other form of intentional or careless poisoning of their fellowmen.

Third. Tubercular cattle ought to be killed at once and their carcasses burned with rosin or tar. Pecuniary losses which individuals might thus suffer are not worthy of a moment's consideration when compared with the evil which may thus be prevented. It would pay the state well, however, to compensate them.

Fourth. When it is necessary to feed infants with cow's milk, it should always be thoroughly boiled; and in fact it would be well for older persons to avoid the use of raw milk unless they are perfectly certain that it comes from a healthy herd.

PRECAUTIONS TO BE TAKEN BY THOSE WHO ARE PREDISPOSED TO CONSUMPTION.

Those who inherit a predisposition to consumption, or who have been informed by physicians that they have weak lungs, should avoid—

First. Living in a damp situation, a damp house, or a house with a damp or foul cellar.

Second. Frequenting crowded and ill-ventilated assembly rooms.

Third. Sleeping in ill-ventilated apartments.

Fourth. Sedentary occupations within doors.

Such persons should always endeavor to obtain a sunny room. The one grand preventive, however, is living in the open air. Southern climates are beneficial in the early stage of the disease simple because they afford an opportunity for open air life, not because there is anything curative in the warmth. The children of consumptives should, therefore, be brought up, if possible, in the country. Their education should be shaped with reference to the adoption of an avocation which will compel them to live much out of doors, and their tastes should be trained in the same direction. If, notwithstanding these precautions, they exhibit a lack of vigor and atendency to weakness of the chest as they come to maturity, it would be well for them to select as their permanent abode some region which is celebrated for its freedom from this disease; such as the Adirondacks, Colorado, Florida, New Mexico, or the sub-tropical islands of the Atlantic ocean. This is far more rational, and no whit more distressing than seeking those climates when the lungs have become seriously affected, in the too often vain and illusory hope of healing them. The food of such persons, as well as of actual consumptives, should be abundant and nourishing, and milk and cream should be freely used, with the precautions already suggested.

Consumptives should never house themselves on account of the weather. They should be warmly clad, with woolen next the skin, and then make it a duty to go out in all weathers and temperatures.

PRECAUTIONS TO BE OBSERVED BY THE PATIENT.

Painful as the conviction that he is liable to be a dangerous source of infection to his family and friends, as well as to the public, must be to the suffer from phthisis, it must be forced upon him. This is the duty of his medical adviser. In any case where a patient presents himself with a persistent cough accompanied by expectoration, unless the physician feels absolutely sure from the physical signs that the case is one of consumption, he should make or procure a miscroscopic examination of the sputa. The accompanying illustrations taken by permission from an admirable paper by A. Arnold Clark, Esq., on the " Germ Army—How it may be Routed," published in a supplement to the annual report of the Michigan State Board of Health, will enable any one familiar with the use of the microscope to discriminate between this bacillus and other disease germs.

What the patient must see to is that under no circumstances shall his expectoration be allowed to dry before it is destroyed, or placed where it can by no possibility be a source of danger. To this end he must scrupulously avoid spitting on his handkerchief, on the floor, or on the ground. When away from his home he should carry with him a small flask containing a small quantity of five per cent. solution of carbolic acid or corrosive sublimate, a grain to the pint, or some other disinfectant. At the last meeting of the American Public Health Association a flask was exhibited designed for this express purpose, having a movable cover on each end, in order to allow of its being thoroughly cleansed. In the house it would be well to use a small paper cup, which should be set inside a china or metallic cup, the latter containing a disinfectant solution which should moisten the bottom of the former This paper cup should be burned, or otherwise safely disposed of, at least once a day; if the expectoration is coniderable, much oftener. A cut of such a cup which can be found at many apothecaries, made of pasteboard or chip, accompanies this circular. A simple substitute for such a cup can be easily made by rolling two or three thicknesses of newspaper into a cone, nicking the open end, and folding it over the edge of the outside receptacle. Care must, of course, be taken that the sputa do not become dry upon the paper. If a spittoon is used it should always contain water with the addition of a disinfectant, and should be of such shape that the sputa may fall directly into the water without resting on the sides of the vessel. All such receptacles should be frequently emptied and cleansed with boiling water, and potash soap. The contents should never be thrown upon the surface of the ground, or where domestic animals can get at it. The ordinary wooden spit-box filled with sand or saw-dust, so often found in public houses, is very objectionable, and should at once be banished. If a patient is so extremely ill as to be compelled to use a handkerchief or cloth, these should either be burned or soaked for several hours in a five per cent. solution of carbolic acid, and then boiled and washed.

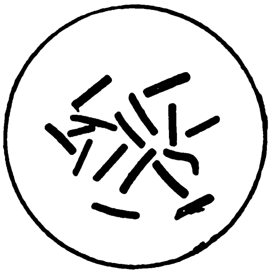
A consumptive mother should on no account nurse her own infant. While, as already stated, the breath of the patient is not a germ-carrier, yet it will be readily understood how the disease might be transmitted by kissing upon the mouth.

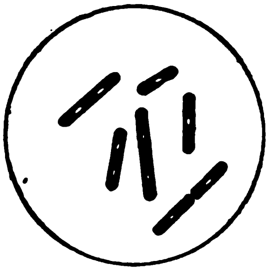
PRECAUTIONS TO BE TAKEN IN THE SICK ROOM.

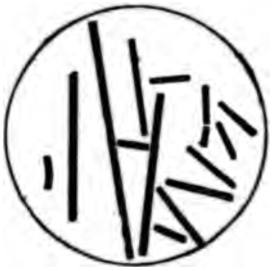
The duster, and especially that potent distributor of germs, the feather duster, should never be used in the room habitually occupied by a consumptive. The floor, wood work, and furniture should be wiped with a damp cloth. The patient's clothing should be kept by itself, and thoroughly boiled when washed. It need hardly be said that the room should be ventilated as thoroughly as is consistent with the maintenance of a proper temperature.

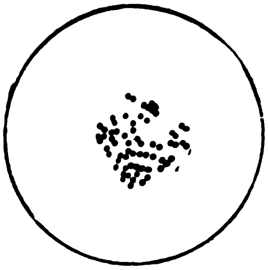
PRECAUTIONS TO BE TAKEN AFTER THE DEATH OF A PATIENT.

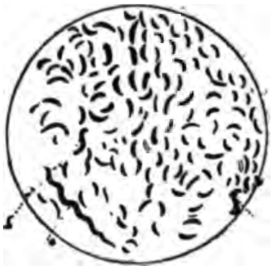
When a death has occurred from this disease, the patient's clothing and bed clothing should be boiled or disinfected by superheated steam. The wood work, furniture, walls and floor should be washed with a disinfectant solution of either carbolic acid or corrosive sublimate. If the walls are covered with ordinary paper it should first be wet with a disinfectant solution and then scraped off while wet. An abundance of fresh air and sunshine should then be admitted for several days.

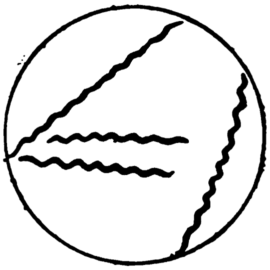

Tuberculosis.


Typhoid Fever.


Anthrax


Erysipelas

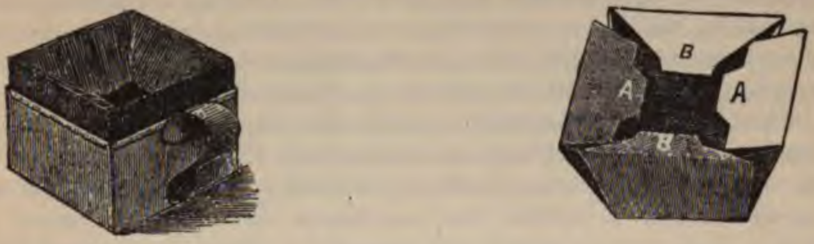

Asiatic Cholera


Relapsing Fever

In the above plate are exhibited six specimens of micro-organisms, which are magified approximately, as follows:

Tuberculosis (bacillus), about 1100 diameters.
Typhoid fever (bacillus), about 1100 diameters.
Anthrax (bacillus), about 1400 diameters.
Erysipelas (micrococci), about 1300 diameters.
Asiatic cholera (bacillus), about 800 diameters.
Relapsing fever (spirillum), about 1300 diameters.

PASTEBOARD CUP AND HOLDER.



PRECAUTIONS TO BE TAKEN BY THE PROPRIETORS OF PUBLIC HOUSES AND PUBLIC CONVEYANCES.

Every public house, hotel, hall, place of amusement, steamboat or railroad car should be well supplied with metallic or china spittoons in which a disinfectant solution, which need not necessarily have an odor, should be constantly kept. Proprietors of sanitaria which are frequented by consumptives need to exercise special care in regard to their rooms. It would be well that steamship and railroad companies should furnish separate accomodations for persons thus affected, which apartments should be kept scrupulously clean, in accordance with the preceding suggestions.

Should the recommendations of this circular be generally followed, the expectation is not Utopian that the present generation may witness a very considerable reduction in the ravages of what has been, not unappropriately, termed "The Great White Plague.

BENJN. LEE,
Secretary.

2—THE DANGERS ARISING FROM PUBLIC FUNERALS IN CASES OF DEATH FROM ACUTE COMMUNICABLE DISEASES.

(Addressed to the Clerical Profession in the State of Pennsylvania).

Shortly after the inauguration of the state board of health, the board thought it wise to issue a letter to the reverend clergy of the state, requesting, in general terms their co-operation in the great and difficult work of instructing the people in the essential principles of health as well as holy living. This circular was widely distributed and the board has reason to believe generally read. In the course of it their aid was asked:

(*a*) in disseminating information as to certain important yet simple *facts;* and.

(*b*) in impressing, *by example*, their own application of the value of those facts.

No class, it was maintained could better aid in maintaining a good condition of public health. because of their wide-spread influence professionally, their general intelligence, and their opportunities for *personal* influence in individual cases of ignorance, or neglect of the fundamental principles of health which come under their observation.

The board now respectfully asks the attention of ministers of all denominations and of every order, throughout the commonwealth, to a specific evil of a seriousness which cannot be over-estimated, in the removal of which it invites their assistance, and one the removal of which, from its very nature can scarcely be hoped for without their cheerful co-operation.

This evil is the practice of holding public funerals in the case of persons who have died of acute contagious or infectious diseases. By a public funeral is here meant one to which others than the inmates of the house in which the death took place or the immediate family of the deceased are invited or admitted, whether in the house or in a church, chapel or other building.

Section 35 of the model ordinance put forth by this board a guide for municipal bodies in forming their own health laws, reads, as follows:

"There shall not be a public or church funeral of any person who has died of Asiatic cholera, small-pox, typhus fever, diphtheria, yellow fever, scarlet fever or measles, and the family of the deceased shall in all such cases limit the attendance to as few as possible. and take all precautions possible to prevent the exposure of other persons to contagion or infection, and the person authorizing the public notice of death of such person shall have the name of the disease which caused the death appear in such public notice."

The first suggestion which the board would make is that such of the clergy as reside in cities or boroughs should give no rest to the municipal authorities until they have induced them to incorporate this ordinance into their statute book.

Through the columns of the secular and religious press, by personal interview, and in public meetings, if necessary, called for that very purpose, they can bring an influence to bear that the most obdurate councilman cannot afford to disregard. the most ignorant cannot fail to understand. This will place the responsibility where it properly belongs, and relieve them from the painful duty of refusal when solicited to perform such services by unthinking persons.

The second request is that wherever they may reside, whether in city or country, they shall absolutely refuse to hold public services in such cases, no matter what the social standing of the family of the deceased or how close the tie of the pastoral relation may have been. Of course objections will arise in every mind to what seems so extreme a course. These however have been so calmly considered in a spirit of the truest christianity, and so thoroughly met by one of their own number that the board asks nothing further than an attentive perusal of his excellent article which is appended. It may be appropriately prefaced with the statement that the almost invariable report of the medical inspectors of the board when sent to investigate the outbreaks of diphtheria which have been so frequent and often so fatal during the past few years, has been to this effect "public funerals have been almost universally held, the casket often opened for inspection in the church, and many cases can be traced to exposure from this source."

THE DANGERS ARISING FROM PUBLIC FUNERALS IN THE CASE OF CONTAGIOUS DISEASES.

By REV. S. BRIDENBAUGH, *of Norristown, Pa.*

(Read before the State Sanitary Convention at Norristown, May 10, 1890.)

Deeply interesting to the living must ever be the disposal of the bodies of those whom they have loved and lost. The manner or method of treating the bodies of the dead is, in large measure, indicative to the condition and character of a people. Hence we find that funeral customs have always varied according to time and place, and that they have associated themselves with a variety of sentiments the expression of which has been attended, not infrequently, with actual cruelty towardthe living.

Under the influence of the christian religion some marked changes were made in funeral rites and observances, so that they became the direct antitheses to the customs of the Pagans. While the latter generally cremated their dead, the christians always *buried* them. The Pagans buried by night; the christians by day. The Pagans carried the funeral cypress; the christians substituted palm and olive branches, symbols of victory and peace.

But while the general tendency of mankind regarding funeral customs has been one of advance, it must be clearly evident to any thoughtful person that further reform is needed in certain particulars, the importance of which will be seen and acknowledged by most people so soon as their attention has been directed thereto. Of these customs none call more vociferously for reform than that of *conducting public funerals in the case of contagious diseases.*

Before a convention such as this, it is unnecessary to cite authorities to convince you that contagious diseases, such as diphtheria, scarlet fever, small-pox, yellow fever, may be communicated by exhalations from the bodies of the dead as well as by contact with living person afflicted therewith. This we assume on the strength of the almost universal testimony of the medical profession. We are assured by physicians that wherever bodies of those having died from contagious disease are exposed the germs of such disease are present, and that it is possible for these to find lodgment in the furniture of rooms, the walls of dwellings and in the clothing of those in attendance. This being so, what a probability there is that any one present, susceptible to the particular malady of which the person has died, may fall a victim to the disease and perhaps aid innocently in carrying it to others.

Such occurrences have, indeed, been very frequent in communities where public funerals have been permitted in the case of those dying from contagious diseases.

About twelve years ago, while pastor in a town of western Pennsylvania, malignant diphtheria became epidemic. A child died of this disease in a house opposite the public school building. Burial did not take place until the third day after the occurrence of death. During a considerable portion of that time the remains were exposed to public gaze. More than a hundred pupils of the schools availed themselves of the opportunity to linger around the corpse and take a last look at the remains of their departed schoolmate. The disease spread. In the town and surrounding country at least one hundred and fifty persons were infected with it. About forty died. This will not be surprising when I assure you that all the funerals were public. Whether held in the house or in the church in most instances crowds thronged to view the remains and aid in spreading the disease. There was no board of health, and a majority of the people were doubtless unaware of the danger to the living in their efforts to show respect for the dead.

Not very long ago a child died of diphtheria in Ravenwood, Illinois. The body was removed to a town in Ohio, where sympathizing friends and others "viewed the remains." As a result an epidemic of diphtheria broke out and many deaths occurred in consequence thereof. On the twenty-second of last month a well-authenticated report from St. Paul, Minnesota, said: "Malignant diphtheria is epidemic in the village of Vining, in Otter Tail county. The village has a population of about one hundred and fifty persons, nine-tenths of whom are afflicted with the disease. There have been twenty deaths since April first, and thirty altogether. Instead of adopting measures to check the contagion the people, mostly Scandinavians, are seemingly doing everything possible to spread it. The funerals of all the victims have been public and largely attended"

In "The Annals of Hygiene" for November, 1888, I find recorded this incident: "An adult person died of diphtheria. The corpse was taken a few miles distant to the home of a relative. The coffin was opened, and the body exposed to the view of relatives and friends. In a few days there was a severe outbreak of the same disease among the inmates of that home. There had been previously no case of diphtheria in that village".

Before the thirteenth annual meeting of the American Public Health Association, Dr. Stewart, health commissioner of the city of Baltimore, said: "I know that in an epidemic of small-pox that occurred in Baltimore two or three years ago, the great start the disease obtained was from a public funeral which took place in a church. Five or six hundred people were present. In that locality within two or three weeks the disease was dotted around in four or five houses, and hundreds of cases came from that one cause."

We could multiply instances of like infection and fatal results arising from public funerals in the case of contagious diseases. But let these suffice.

Knowing the fact that infection does occur by persons coming within reach of the germs exhaled from the bodies of those having died of diseases such as we have mentioned, what is our duty with reference to the obsequies in connection with the burial of these departed ones? Clearly, it would seem, to discourage in every feasible way the holding of public services over the bodies either in the home or the church.

In instances of this kind three persons are invested with a special responsibility—the physician, clergyman and the undertaker. To evade this responsibility, and neglect to dissuade, if possible, sorrowing friends from having public funeral rites, is to manifest a lack of proper regard for the welfare of the living. I know the difficulty that will confront us. There is, it would seem, planted deep in the human breast a desire to honor the dead. And, unfortunately, there are those who think that honor can best be shown by a public funeral pageant. Whatever is said to bereaved relatives at such a time, therefore, must be spoken with the utmost gentleness. But they should be instructed as to the duty of subordinating their wish to honor the dead to the important matter of preserving the health of the living. Let surviving friends be assured that whilst we esteem the sentiment which prompts them to testify their respect to the memory of the departed by public funeral services, we do not regard the omission of such services, when required by the public good, as resulting in any detriment to the dead, either in the way of dishonor to the body or injury to the spirit.

Whenever the public health requires it let the burial be private; yea, if the safety of the living can be the better assured thereby, let the night season be chosen wherein gently to lay away in the bosom of the earth the body of the departed.

This need not, in any sense, prevent the living from showing all respect and honor to the memory of the dead: for, if desired, at some later time, when there is no longer risk or danger of contagion, relatives and friends can meet together in the home or sanctuary and there engage in fitting services.

Certainly it must be considered very thoughtless, if not selfish, for the members of one household to insist that persons from many other homes shall be subjected to the danger of infection and consequently of being lost to those near and dear to them in order that a public funeral service may be held over the unconscious remains of one who can neither be benefited by it, nor injured by the omission of it. And most persons, we believe, will readily yield in this matter if properly advised. But, if any are unreasonable and insist upon public funeral rites, with an apparent disregard of the health of others, and the fearful sacrifice of human life that may result, it becomes the duty of the proper authorities to call to their aid the strong arm of the law. If rendered necessary, the police power should be invoked to teach such persons that it is a high moral duty to forego their personal preference and to sacrifice their individual liberty that the welfare of the community may be conserved. In instances of this kind the board of health should take possession of the house when death occurs; direct when and how the burial shall take place; destroy clothing and other articles that have been in contact with the patient; disinfect the house and the corpse and take every necessary precaution for preventing further infection.

Fortunately, in this commonwealth, legislation has been such as to endow councils of cities and boroughs with all the powers needed for the protection of the health of their respective localities. But, as we all know, such laws depend, in great measure, for their enforcement upon public opinion and the sentiment of the particular community. Hence the great importance of such education as this state board of health is seeking to give. These efforts of your board should be supplemented by proper teaching on the part of the church, to which the affair of funerals has been almost entirely delegated. Ministers can do much in the way of explaining to people how it is possible to manifest proper respect for the dead without disregard of the living.

The following words of John Ruskin, the celebrated English writer and critic, contain a truth that is worth pondering: "Our respect for the dead, when they are *just* dead, is something wonderful, and the way we show it more wonderful still. We show it with black feathers and black horses; we show it with black dresses and black heraldries; we show it with costly obelisks and sculptured sorrow. * * * This feeling is common to the poor as well as the rich; and we all know how many a poor family will nearly ruin themselves to testify their respect for some member of it in his coffin, whom they never much cared for when he was out of it; and how often it happens that a poor old woman will starve herself to death in order that she may be respectably buried."

To the members of my own profession I would say that, as a rule, brevity should characterize funeral services. The customary funeral discourse we have come to regard as of doubtful benefit. After reading that sublime discourse of St. Paul in the fifteenth chapter of first Corinthians, it is hardly possibly for the minister to say much more of importance upon the hope of immortality.

And it would be well for all if we could "quit our habit of thinking that what we say of the dead is of more weight than what we say of the living. The dead either know nothing, or know enough to despise both us and our insults or adulation."

3—THE DISPOSAL OF THE SEWAGE OF PUBLIC EDIFICES.

The State Board of Health of Pennsylvania desires to call the attention of the trustees, managers, superintendents and overseers of all state and county institutions to the importance of avoiding the pollution of the water courses by the drainage of their buildings. With the rapidly increasing density of population which distinguishes this commonwealth, the question of the disposal of sewage in rural districts and small towns becomes every year more serious. Especially is it so with regard to public institutions, where large numbers of individuals are crowded into comparatively small areas. Such establishments often contain within their walls a population twice as large as that of an ordinary village. But instead of disposing of their filth in small deposits over a large area, they are enabled by the modern appliances of plumbing to pour it in a concentrated form into the nearest stream. So far as the halth of their own inmates is concerned this is often (not always, as recent investigations of this board have shown) the best plan. But so far as the health of those who live farther down the streams, and of the domestic animals which pasture along their borders is concerned, it is the very worst plan, and one which civilized communities will not much longer tolerate.

The whole theory of modern sanitation is founded on the belief that man is his brother's keeper; and the whole theory of American freedom is based on the idea that the inherent rights of one man or community to the enjoyment of "life, liberty and the pursuit of happiness" are to be so exercised that they shall interfere with the enjoyment of the same inalienable rights by no other man or community. It needs no argument to prove that the wholesale poisoning of a stream in a populous region does so interfere with the enjoyment of those rights by all who live on its banks, or through whose property it passes below the point of contamination. Hence the pollution of streams has become one of the most urgent problems with which the sanitarian has to deal. In Great Britain it has led to the establishment of the "Rivers Pollution Commission," which has now been in existence for many years, and has spent thousands of pounds in its investigations. It must be remembered that what are there called rivers, would by us often be called runs, brooks or creeks. There are, it is true, few general statutes in this Commonwealth bearing on the subject: but it must be borne in mind that, in the language of Judge Thayer, of Philadelphia, in the case of the Commonwealth *v.* Soulas *et al.*, November 25, 1884, "it is a very old and well-settled law that to pollute a public stream is to maintain a common nuisance. It is not only a public injury, but it is a crime, a crime for which those who perpetrate it are answerable in a tribunal of criminal jurisdiction."

The length of time during which such material has been deposited in any one locality, so far from constituting an excuse, only adds to the gravity of the question. The longer the pollution of the soil or of the banks and bed of a water course has been going on, the more complete will be their saturation with organic filth, and the greater the danger. "No length of time (says Judge Thayer in the opinion above alluded to) can justify a public nuisance. * * * * * Public rights are not destroyed by private encroachments, no matter how long they have endured. Nor is it any defense that the river is also polluted from other sources. * * * * * No man can excuse himself for violating the law upon the ground that others violate it. * * * * It is no defense to say that the premises are in the same condition, and the drainage conducted in the same manner as when the defendants obtained possession and began their occupancy. The law is perfectly well settled that no man can prescribe for a public nuisance or defend himself by showing that others have violated the law before him."

In the eyes of the law a public institution, no matter how large, stands of course on the same footing as a private individual.

The decision given *eo die* (that is without taking much time to advise or consult, showing that the case was a perfectly clear one to the court) in the case of Albertson *v.* The City of Philadelphia *et al.*, in the court of common pleas, July 15, 1882, established a precedent which no judge will be likely to set aside. In this instance the city of Philadelphia and William Baldwin, commissioner of highways, had contracted to build (under alleged authority of an ordinance of March 7, 1882), and were building, a sewer, which was intended to drain into a small stream running through Albertson's lot, and finally emptying into the Schuylkill river. Previously to this time, only pure water had passed through the stream. The proposed sewer would discharge into it fecal and other filthy material from many dwelling houses, the stables of a railroad company, a hospital and an institution of learning. The city was enjoined from using or permitting the said sewer to be used for any purpose other than surface drainage.

It is evident that, if a city, which possesses the right of eminent domain, and is, by the terms of its charter, especially authorized to construct sewers, can be enjoined from discharging its filth into a small stream running through private property, so much the more can a hotel, school, hospital or jail.

This matter is forcing itself upon the attention of borough authorities, hotel proprietors, mill owners and other employers of large bodies of operatives throughout the entire commonwealth.

The state board of health is especially desirous that all state establishments, such as asylums, hospitals, colleges and schools, and all county institutions, such as jails and almshouses, which derive a portion, if not all of their support from the public funds, and which are generally looked upon as models by the communities in the midst of which they are placed, should set the example to municipalities and private individuals of making proper provision for the purification of their sewage before it is permitted to enter any stream. The board therefore, earnestly represents to the trustees or other responsible heads of all such institutions the seriousness of this growing evil, urging that no time be lost in remedying any offensive and dangerous conditions which may be found to exist.

Numerous plans have been suggested for rendering sewage inoffensive and innocuous. These include irrigation both on and under the surface, filtration, precipitation, oxidation and disinfection. One system will be better suited for one location, quite a different one for another.

It is not the province of this board to indicate, save in the most general way, what means should be adopted in any particular instance to attain the desired end. Competent, and thoroughly educated sanitary engineers are now to be found in every large city, whose advice should be sought. It would be well, however, to submit any proposed plans to the board before they are finally adopted.

Appended is a list of works which public officers, on whom such responsiblities devolve, and who are desirous of informing themselves upon the subject, would do well to consult. They may be obtained of any scientific bookseller.

BENJAMIN LEE, M. D.,
Sec'y State Board of Health.

LIST OF WORKS ON SEWAGE AND DRAINAGE RECOMMENDED BY THE STATE BOARD OF HEALTH OF PENNSYLVANIA.

Adams, W. J. Sewers and drains for populous districts, embracing rules and formulas for the dimensions and construction of works of sanitary engineers. 8vo., cl. ill.; N. Y. 1880. $2.50.

Bayles, J. C. House drainage and water service in cities, villages and neighborhood, etc. New edition. 8vo., cl.; N. Y., 1880. $3.00.

Dempsey, G. D. On the drainage of lands, farms and buildings. Revised with large additions in recent practice in drainage engineering, by D. Kinnear Clark. 12mo., cl. ill.; London, 1887. $3.00.

Gerhard, W. P. House drainage and sanitary plumbling (Van Nostrand's science series, No. 63). 16mo., boards; N. Y., 1882. 50 cents.

Philbrick, Ed. S., C. E. American sanitary engineering. 8vo., cl.; N. Y., 1881. Reporting.

Rawlinson, R. The public health suggestions as to the preparation of district maps and plans for main sewerage, drainage, and water supply. With 18 plans. Folio paper; London, 1878. $1.20.

Slagg, C. Sanitary work in smaller towns and villages. 12mo., cl. (Weale's series). $1.

Slater, J. W. Sewage treatment, purification and utilization. A practical manual for the use of corporations, local boards, medical officers of health, inspectors of nuisances, chemists, etc. 12mo., cloth; London, 1887. $2.25.

Tidy, Dr. C. M. The treatment of sewage. 16 mo., boards; N. Y., 1887. (Van Nostrand's science series, 94.) 50 cents.

Waring, Geo. E., Jr. Sewage and land drainage, with 75 illustrations and 20 separate plates. Quarto, cloth: N. Y., 1889. $6.00.

Zehfuss, Dr. G. The Pneumatic sewage system. Translated by Dr. T. Coar. 8vo., paper; Cologne, 1869. 50 cents.

Crimp, W. Santo. Sewage disposal works: A guide to the construction of works for the prevention of the pollution by sewage of rivers and estuaries. Tables; ill., cl.; Philadelphia: J. B. Lippincott Company, 1890. $7.00.

4—PRECAUTIONS TO BE OBSERVED BY FUNERAL DIRECTORS, UNDERTAKERS AND NURSES IN THE CASE OF THOSE WHO HAVE DIED OF COMMUNICABLE (CONTAGIOUS OR INFECTIOUS) DISEASES.

The state board of health has recently considered it expedient to issue a circular addressed to ministers of religion, requesting them to use their influence to prevent the holding of public funerals in the case of persons who have died of contagious diseases If it can succeed in putting an end to this fertile source of epidemics, it will have accomplished much. There is, however, a period between the death and the obsequies, after the ministrations of the physician have ceased, and before those of the clergyman have begun, which is fraught with danger to the community. During this interval, the sick room, which has now become the chamber of death, the body of the deceased, the contents of the room, and to some extent the arrangements of the house, come under the care and supervision of the undertaker or funeral director. In such cases as we have been considering, when the room itself, its furniture and the corpse, are all centers of infection, his position becomes one of the gravest responsibility. Whether the infection shall be stamped out then and there, or whether it shall make this room a fresh starting point for invading other homes, and desolating other firesides, depends on his knowledge, energy and firmness. It follows from this that it is of the utmost importance that the members of this craft should be men of sufficient intelligence to be able to appreciate the exigencies of the occasion, of such technical education as will enable them to take the proper scientific steps to overcome the danger, and of such respectability that their recommendations will carry weight with their patrons, and that they need not hesitate to assert their authority. This desirable end can only be accomplished by a state system of registration and examination. That this will ultimately be obtained through the efforts of the many intelligent members of the calling who are urging its adoption, there can be little doubt. In the meantime the board desires to asist them to an understanding of the requirements of what has been aptly denominated:* "Sanitary undertaking.—When, how and where undertakers can, and should, be sanitarians."

PRECAUTIONS IN REGARD TO THE FUNERAL.

In the first place then the board declares that the undertaker can, and should, use his influence to induce the family of the deceased to dipense with a public funeral in the case of any person who has died of scarlet fever (scarlatina), diphtheria, membranous croup, diphtheritic sore throat, small-pox, varioloid, typhus fever, yellow fever, or measles. As his advice will be purely disinterested, in fact opposed to his own interests pecuniarily, it will be the more likely to be heeded; and as the minister and the physician may be relied upon to second his suggestion, their agreement in the matter will have great weight. The members of the funeral directors' association might very properly agree to refuse their ministrations in public in such cases. Newspaper notices of death should always state if "of diphtheria,"" of scarlet fever," or any other of the diseases mentioned.

In the second place, he can, and should, use his influence to prevent friends, neighbors and even relatives from coming to view the remains, while they are awaiting sepulture. What terrible results may follow carelessness and the indulgence of idle curiosity in this respect, is well illustrated by the following statement which occurred in the course of an address upon "The dangers arising from public funerals in the case of contagious diseases," delivered by the Rev. S. Bridenbaugh, before the State Sanitary Convention, held at Norristown, in May last, and which forms a part of the circular addressed to the clerical profession on this subject:

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* Address delivered before the Funeral Directors' Association of Pennsylvania, at Philadelphia, June, 1888, by Josiah S. Pearce, president of the association.

"About twelve years ago, while a pastor in a town of western Pennsylvania, malignant diphtheria became epidemic. A child died of this disease in a house opposite the public school building. Burial did not take place until the third day after the occurrence of death. During a considerable portion of that time the remains were exposed to public gaze. More than a hundred pupils of the school availed themselves of the opportunity to linger around the corpse and take a last look at the remains of their departed schoolmate. The disease spread. In the town and surrounding country at least one hundred and fifty persons were infected with it. About forty died. This will not be surprising when I assure you that all the funerals were public.

"Whether held in the house or in the church, in most instances crowds thronged to view the remains and aid in spreading the disease. There was no board of health, and a majority of the people were doubtless unaware of the danger to the living in their efforts to show respect for the dead."

In the third place, he can, and should, avoid taking chairs, palls or other articles of furniture or decoration, which are liable to be used on other like occasions, to houses in which a death from one of the above-mentioned diseases has taken place. And this because so subtle are the germs of contagion *that every room in an infected house may contain them.*

Among the articles to come under this restriction is the ice-box. *An ice-box should never be used for a body dead of an infectious disease.* Among the diseases to which this restriction applies are erysipelas and puerperal fever. Cases of shocking recklessness have been reported to the board, in which the ice used to preserve such bodies has been emptied out on the public street, and the box used the same day in an uninfected house without having been disinfected.

Fourthly, he can, and should, urge that the private burial of the deceased take place at the earliest possible moment after death, within thirty-six hours, unless the local board of health fixes a limit of its own.

Fifthly, he can, and should, refuse to carry, or cause or allow to be carried, the corpse of a child dead of an infectious disease, in a carriage.

Sixthly, he can, and should, insist on the disinfection of every carriage, in which the occupants of the house in which such death took place, have ridden in attending the funeral.

Seventhly, he can, and should, take pains not to be the means himself of spreading the contagion. It would be well for him to have a separate suit of clothes to wear in such cases, and to keep the same well aired and disinfected. He should also take the precaution to take a bath after preparing every such body for burial, and to sponge his entire body with a disinfectant solution. Should he be called upon to attend several of this nature in one day, as may often be the case during epidemics, he should take these consecutively, and then take the personal precautions mentioned, before going to others.

PRECAUTIONS IN REGARD TO THE CORPSE.

The body should be handled as little as possible. No more washing should be done than is demanded by the slightest requirements of decency. The water for this purpose should contain a disinfectant. The hair should never be preserved. If the implements are at hand—and the educated and skilful undertaker will never be without them—the cavities of the chest and abdomen should be injected with a strong solution of chloride of zinc or other antiseptic fluid of full strength. Unless the body is to be kept for a length of time or transported, arterial embalmment is unnecessary, and adds to the risk incurred by the operator. The body should then be at once wrapped in a sheet saturated with strong disinfectant solution, of which corrosive sublimate should be the principal ingredient, and this sheet should be moistened with the same at frequent intervals, or the body should—as soon as possible—be placed in a coffin or casket, lined throughout with a layer of antiseptic cotton not less than an inch in thickness, and closely covered with a similar layer of cotton and the coffin tightly closed, after which it should not be opened on any account.

EMBALMMENT.

The art of embalming, which is practiced more generally and more successfully in this country than anywhere in the world, must be looked upon as a decided advance over the plan of preservation by the use of ice, from a sanitary point of view. The fluids which are used for the purpose are all antiseptic to a greater or less extent. A careful arterial injection with a powerful antiseptic or germicidal solution, must certainly go a great way towards destroying all specific germs of diseases in a body. Instead of the paraphernalia required for the application of cold, all that is needed are a few surgical instruments, and there is no polluted water to be disposed of. To offer suggestions as to the manner of performing the operation and as to the places of selection of the same, would be entirely beyond the province of this board. They may be found in that valuable compendium, "The National Funeral Directors' Official Text Book," which should be studied by every one who aspires to prepare the dead for sepulture and conduct their obsequies. Still less is it the duty of the board to recommend any particular embalming fluid. But it is right that it should state that many substances which will act as preservatives have little or no value as disinfectants. Such are the arsenical preparations and hydrate of chloral. The great germicides are chloride of lime, hypo chlorite of soda, corrosive sublimate and carbolic acid. Chloride of lime, in the proportion of five per cent. is also an agent of considerable value. Hence, the embalming fluid to be used in injecting a body dead of an infectious disease should contain at least one of the first mentioned articles.

Every undertaker is aware that embalming has been objected to on the ground that the fact of death from poison may thus be concealed. The objection is a valid one and will probably lead to legislative enactment on the subject. A written certificate of the cause of death should therefore always be procured from the attendant physician before performing the operation. It should never be attempted in the face of suspicious circumstances.

PRECAUTIONS IN REGARD TO DISINFECTION OF ROOM, FURNITURE AND CLOTHING.

Unless in cities where the board of health undertakes the work of disinfection in private houses, the undertaker should feel that he has a moral responsibility in regard to this important matter. The occupants of the house will usually accept his suggestions, especially if he can show them that they are strictly in accordance with the instructions of the state board of health.

The following are:

STANDARD DISINFECTING SOLUTIONS RECOMMENDED BY THE BOARD.

1. *Standard solution No.* 1.—Dissolve chloride of lime or bleaching powder of the best quality (containing at least twenty-five per cent. of available chlorine) in soft water in the proportion of six ounces to the gallon.

2. *Standard solution No.* 2.—Dissolve corrosive sublimate and permanganate of potash in soft water, in the proportion of two drachms of each salt to the gallon.

(NOTE.—1. This solution is highly poisonous. 2. It requires a contact of one hour to be efficient. 3. It destroys lead pipes. 4. It is without odor.)

3. *Standard solution No.* 3.—To one part of Labarraque's solution of hypo-chlorite of soda (*liquor sodæ chloratæ.*—U. S. P.), add five parts of soft water.

4. *Standard solution No.* 4.—Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potash to give color to the solution, as a precaution

against poisoning. One fluid ounce of this solution to the gallon of water is sufficiently strong. Articles should be left in it for two hours.

(NOTE.—Corrosive sublimate solutions should be kept in wooden or crockery vessels.)

TO DISINFECT DISCHARGES FROM THE BODY.

Use standard solutions Nos. 1, 2 or 3, keeping a pint of the solution used, constantly in a vessel ready for any emergency. Let the discharges, if any, be emptied directly into the solution, and then let a pint more of it be added, and allow the whole to stand for some time before being thrown into the sewer, or being buried.

TO DISINFECT CLOTHING, TOWELS, NAPKINS, BEDDING AND SUCH TEXILE FABRICS AS CAN BE WASHED.

Use standard solution No. 4, *one ounce to the gallon of water*, or use one gallon of solution No. 1, in nine gallons of water. Let the goods soak in the solution for at least two hours—better four hours—before they leave the room. Stir them up so that the solution gets all through them. After disinfection, boil the goods thoroughly.

FOR THE DISINFECTION OF WATER CLOSETS, URINALS, SINKS AND CESS-POOLS.

5. *Carbolic acid solution.*—Mix one pint of carbolic acid with two and a half gallons of water.

Standard solution No. 4, diluted with three parts of water, may also be used in the proportion of one gallon (of the solution) to every four estimated of the contents of the vault. Standard solution No. 1, would require to be used gallon for gallon of the material to be disinfected. Dry chloride of lime may be sprinkled over the contents of a privy, or standard solution No. 2 may be made up by the barrel, and four or five gallons be applied daily during an epidemic.

TO DISINFECT THE SICK ROOM AFTER IT IS VACATED.

If it is possible, let the room be thrown wide open for several days, for a thorough airing. If papered, let the paper be all removed with care and burned. Then let all the walls, the floors and the woodwork of the room, as well as the furniture, be washed with standard solution No, 4, one pint to four gallons of water, or, of solution No. 1, a quarter of a pint to a gallon of water. Let this work be done most carefully, getting the solutions into all the crevices. If any dust be present in the corners and crevices, wipe it out with a rag wet in the disinfecting fluid. *Don't stir it up with a brush or a broom.* Last of all, whitewash the walls and the ceilings.

SULPHUR FUMIGATION.

Is believed in by many as very efficacious, but should not be allowed to take the place of the scraping and scrubbing. It is performed in the following manner. Open wide all the drawers and closet doors. Hang on a line, opened up as much as possible, all the woolen articles which have been in the room during the sickness, and which have not been disinfected and washed; then burn two pounds of sulphur for every thousand cubic feet of air space in the room. Every opening in the room—flues, doors, windows, cracks and crevices—must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub, containing a little water to guard against fire. A little alcohol, or kerosene, must be poured upon the sulphur by means of which it may be ignited. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days. Fumigation may be practiced while the body is still in the rooms.

BEDS WHICH HAVE BEEN SATURATED WITH THE DISCHARGES OF THE PATIENT.

Childrens' playthings used during sickness, paper books, articles of fur and wool, such as strips of carpet and pieces of badly-infected woolen clothing, should be burned, never given away. If there is an open fire place or a stove in the room many small articles may at once be burned on the spot. In a city this is best done by making them up into a compact bundle in the sick room, thoroughly dampening the outside of the bundle with a solution of chloride of lime or corrosive sublimate in water, and then carrying it to the glowing furnace under a large boiler in some industrial establishment. If in the country, these things should be carried into a field or a wood far from any human habitation, and there made to burn thoroughly and quickly, to do which the bundle should be opened and saturated with petroleum. *Under no circumstances should such things be thrown onto an open space or into a stream or pond.*

PRECAUTIONS TO BE OBSERVED IN REGARD TO THE DISINTERMENT AND TRANSPORTATION OF DEAD BODIES.

Too scrupulous care cannot be observed in the transportation of the bodies of those who have died of infectious diseases, to a distance from the place of death. The following extract from the last quarterly report of the State Board of Health of Maryland, furnishes only one of a hundred instances which might be adduced in proof of this statement:

"About the middle of June last a child died of diphtheria in a city in a neighboring state, and, upon a certificate furnished by a physician of that city that the child died of pneumonia, the corpse was transported into this state by the Philadelphia, Wilmington and Baltimore Railroad Company in an ordinary casket, without metal or any antiseptic precautions. On the arrival of the body at Conowingo Station, it was immediately removed to the residence of the grandfather, at Prospect, where the coffin was opened and the remains viewed by the family.

In a few days thereafter there was an outbreak of diphtheria in the house, and in less than a month six or seven members of the family were attacked, and five died of the disease in a malignant form. It then spread to other families in the neighborhood."

The board therefore earnestly calls the attention of all funeral directors throughout the commonwealth to the following regulations. No railroad company or its employes can be compelled to take a body unless the same have been complied with.

REGULATIONS OF THE STATE BOARD OF HEALTH OF PENNSYLVANIA IN REGARD TO THE DISINTERMENT AND TRANSPORTATION OF THE DEAD.

Disinterment of bodies.

Rule 1.—The removal of any body from its place of original interment is declared to be a nuisance dangerous to the public health, and is prohibited, unless the same be done under the direction and by permission of the state or local board of health or borough council.

Rule 2.—The above rule applies as well to the removal of a body from one grave or vault to another, in the same cemetery, as to its removal to another burial ground or place.

Rule 3.—The removal of dead bodies from any burial ground situated within the built up portions of any city or borough is forbidden between April 1 and October 15.

Rule 4.—The disinterment of the bodies of any person who died of any contagious or infectious disease is strictly prohibited, unless by special authority, and upon such conditions as the state or local board of health or borough council may impose.

Transportation of bodies.

Rule 1.—The transportation of bodies of persons dead of small pox, varioloid, Asiatic cholera, leprosy, typhus fever or yellow fever is strictly forbidden.

Rule 2.—The bodies of persons dead of diphtheria, membranous croup, anthrax, scarlet fever, puerperal fever, typhoid fever, erysipelas, measles, whooping cough, or dysentery must be wrapped in a sheet thoroughly saturated with a strong solution of bi-chloride of mecrury, in the proportion of one ounce of bi-chloride of mercury to a gallon of water, and encased in an air-tight zinc, tin, copper or lead lined coffin; or in an air-tight casket, hermetically sealed, and all enclosed in a strong, tight wooden box; or the body must be prepared for shipment by being wrapped in a sheet disinfected by a solution of bi-chloride of mercury as above, and placed in a strong coffin or casket, and said coffin or casket encased in a hermetically sealed (soldered) zinc, copper, or tin case, and all enclosed in a strong, outside, wooden box of material not less than one inch thick.

Rule 3. In the case of contagious, infectious, or communicable diseases the body must not be accompanied by persons who, or articles which, have been exposed to the infection of the disease. And, in addition to the permit from the board of health or proper health authority, agents will require an affidavit from the shipping undertaker, stating how the body has been prepared and the kind of coffin or casket used, which must be in a conformity with Rule 2.

Rule 4.—The bodies of persons dead of diseases that are not contagious, infectious, or communicable, may be received for transportation to local points in this state when encased in a sound coffin, or metallic case, and enclosed in a strong wooden box, securely fastened, so that it may be safely handled. But when it is proposed to transport them out of the state (unless the time required for transportation from the initial point to destination does not exceed eighteen hours), they must be encased in an air-tight, zinc, tin, copper, or lead lined coffin, or a strong coffin or casket encased in a hermetically sealed (soldered) zinc, copper, or tin case, and all enclosed in a strong outside wooden box of material not less than one inch thick. In all cases the outside box should be provided with four iron chest handles.

Rule 5.—Every dead body must be accompanied by a person in charge, who must be provided with a transit permit from the board of health, or proper health authority, giving permission for the removal, and showing name of deceased, age, place of death, cause of death, (and if of a contagious or infectious nature), the point to which it is to be shipped and the names of medcial attendant and undertaker.

Rule 6.—The transit permits must be made with a stub and two coupons; the stub to be retained by the person issuing it; the first coupon to be detached by agent at initial point, and sent to the general baggage agent, and the second coupon by the 1st train baggageman, while the permit itself must accompany the body to its place of destination. The stub, permit and coupons must be numbered so that one will refer to the other, and on the back of the permit there must be space for the undertaker's affidavit to be used in case of contagious or infectious diseases, as required by rules two and three.

Rule 7.—The box containing corpse must be plainly marked with a paster, showing name of deceased, place of death, cause of death, point to which it is to be shipped, number of transit permit issued in connection, and name of person in charge of the remains. There must also be blank spaces at the bottom of the paster for the station agent at the initial point, to fill in the form and number of the passage ticket, where to, and route to destination of such ticket.

Rule 8.—It is intended that no dead body shall be moved which may be the means of spreading disease; therefore, all *disinterred* bodies, dead from any disease or cause, will be treated as infectious and dangerous to the public health, and must not be accepted for transportation, unless said removal has been approved by the state or local board of health, and the consent of the health authority of the locality to which the corpse is consigned, has first been obtained, and the disinterred remains have been enclosed in a hermetically sealed (soldered) zinc, tin, or copper lined coffin or box, or a box encased in a hermetically sealed (soldered) zinc, tin, or copper case.

Form of paster.

CERTIFICATE OF UNDERTAKER.

.... Date, ...18....
Name of deceased, ...
Place of death, ...
Cause of death, ...
For interment at..
Name of person in charge, ...
Number of transit permit, ...
Signed ....Undertaker......
....P. O. Address.

The above to be filled out by undertaker and attached to box containing corpse.

From ....to....................State,......
Number of ticket,......................Form No. of ticket,........
From..........................To..............................
Via ....R. R.........................Junction
Via ....R. R.........................Junction
Via ....R. R.........................Junction
Via ....R. R.........................Junction
Signed..........................Station Agent......

The above to be filled out by agent or baggageman in the initial point, showing description of ticket, exact route, and via what junction points the ticket reads, which is held by passenger in charge of corpse.

No.........Date. 189

TRANSIT.

"Stub to be retained by official issuing Permit."

TRANSIT PERMIT.

1. *Issued to*.......... ....
2. *Name of Deceased*, ...
   [If a minor, give parent's names.]
   ....
3. *Interment at* ....
4. *Date of Death*,.................. ......*Age*,......
5. *Place of Death*, ...
6. *Cause of Death*,.............................. ...
7. *Certified by*...... ....
   ....*M. D.*

FRONT.

☞ This Permit must in all cases accompany the body to its Destination.

No.......

FORM 7.

Commonwealth of Pennsylvania.

STATE BOARD OF HEALTH.

[To be issued by any State or Local Health Officer.]

R. R. Agents and all other Carriers see back of permit.

TRANSIT PERMIT.

Office of ....*County.*

... .189

Permission is hereby given to remove the remains of ....

aged........ ....*who died at* ....
[City, Borough, or Township and County.]

on the........*day of*..........189 ; *the cause of death being*...............

....*which is a*.. ....*disease, and a Transit Permit being*

asked for burial at... ....*in the State of* ....

Name of Undertaker or Person in charge of the Transit.
....

Name of Medical Attendant.
....

Signed by,............ ....
....
[Official title.]
....
[P. O. Address.]

Coupon No. Two to Transit Permit No.............
for the body of
who died at......................
This coupon will be detached by Train or Boat Baggageman of terminal line and sent to General Baggage Agent. (See Back.)

Coupon No. One to Transit Permit No. ....
for the body of
who died at......................
This coupon will be detached by Agent or Station Baggageman at initial point and sent to General Baggage Agent. (See Back.)

Undertaker's Affidavit—In case of Infectious or Contagious disease.

BACK.

State of Pennsylvania,...189

I Hereby Certify, That the body of....................................*named in this transit permit has been prepared by me for transportation by being*.................................... ....

....

(*Signed*)..*Undertaker.*

State of .... }
County of......................... .... } *On this*.............*day of*.... .... *A. D.* 189

before me, a.......... ....(*Notary Public, Justice of the Peace,*) *in and for the County and State aforesaid, personally appeared* .... *to me known, and made oath and says that all of the statements contained in the foregoing are true.*

Sworn and subscribed to before me this..........*day of*................*A. D.* 189

[SEAL] ....
....

SECOND COUPON. } *Taken at*.....................
By.........................

FIRST COUPON. } *Taken at* ....
By.. ....

It is expected that local boards of health and borough councils will have blanks printed in conformity with these models. Until this has been done, however the state board will furnish copies to any undertaker on application to the secretary.

In issuing this circular to the undertakers of the state the board has a two-fold object in view:—

First, the protection of the health of the people of the commonwealth against the dangers of infection; and, secondly, the defining of the position of the undertaker in the community, as an efficient and fitting agent of the board in the prosecution of its endeavors to "limit the progress of epidemic diseases."

To the end that the greatest good to the community may result from this effort, the board earnestly urges all families or persons interested in any way, in any such case as is referred to in this circular, to cheerfully aid the undertaker in complying with these instructions.

It is suggested that undertakers carefully preserve this circular and exhibit it to any and all persons who call in question the necessity for the precautions which they suggest, or disregard their advice; and that where these instructions are wilfully violated, the case be immediately reported to the secretary of this board. The state board of health confidently expects the co-operation of every intelligent and conscientious undertaker in the state in the prosecution of this very important feature of its work.

BENJAMIN LEE, M. D.,
Secretary and Executive Officer.

EXECUTIVE OFFICE, 1532 PINE ST.,
PHILADELPHIA, *December* 1, 1890.

APPENDIX G.

REPORT OF THE STATE PHARMACEUTICAL EXAMINING BOARD OF PENNSYLVANIA.

LANCASTER, PA., *September 17, 1890.*

To His Excellency JAMES A. BEAVER, *Governor:*

SIR: In compliance with the provisions of section four of the act to regulate the practice of pharmacy and sale of poisons, and to prevent adulterations in drugs and medicinal preparations in the State of Pennsylvania, approved May 24th, 1887, I have the honor to transmit the third annual report of the board, for the year ending June 30, 1890.

H. B. COCHRAN, *Secretary.*

Members of the Board.

Alonzo Robbins, president, Philadelphia· Harry B. Cochran, secretary, Lancaster; Frederick H. Eggers, reasurer, Allegheny City; Adolph J. Tafel, Philadelphia; Andrew B. Burns, Montrose.

REPORT.

The board has held four meetings and examinations during the year ending June 30, 1890.

The first meeting was held in the High School at Altoona on Tuesday, July 9, 1889. Thirty-five applicants appeared for examination; twenty-four applying for the registered pharmacist's certificate, and eleven for the qualified assistant's certificate. Eight of the former and six of the latter class were successful.

The first session of the second meeting was held in the Central High School at Philadelphia, on Monday, October 7, and the second session in the College of Pharmacy at Pittsburgh, on Tuesday, October 8, 1889. One hundred and fourteen applicants appeared for examination; sixty-three applying for the registered pharmacist's certificate and fifty-one for the qualified assistant's certificate. Twenty-two of the former and twenty-six of the latter class were successful.

The third meeting was held in the Central High School at Philadelphia, on Tuesday, January 7, 1890. One hundred and six applicants appeared for examination; fifty-two applying for the registered pharmacist's certificate and fifty-four for the qualified assistant's certificate. Fifteen of the former and twenty-eight of the latter class were successful.

The fourth meeting of the year was held in the hall of the House of

Representatives at Harrisburg, on Tuesday, April 29, 1890. One hundred and forty-one applicants appeared for examination; ninety-four applying for the registered pharmacist's certificate and forty-seven for the qualified assistant's certificate. Thirty-nine of the former and twenty-eight of the latter class were successful.

The number of persons examined during the year was three hundred and ninety-six (396), the number which succeeded in passing the examination was one hundred and seventy-two (172).

The number of persons registered during the year, under the supplement, under the provisions of section eleven and by examination, was five hundred and eighty-nine (589).

The total number of certificates issued up to June 30, 1890, is six thousand two hundred and six (6,206), of which number one thousand five hundred and five (1,505) are qualified assistants.

An alphabetical list of the pharmacists registered during the year, is herewith appended.

Balance of money on hand at last report, one thousand five hundred and ninety-eight dollars and forty-four cents ($1,598.44); amount received during the year, one thousand two hundred and fifty dollars and seventy-five cents ($1,250.75); total, two thousand eight hundred and forty-nine dollars and nineteen cents ($2,849.19).

Amount disbursed during the year, one thousand seven hundred and fifty-seven dollars and twenty-three cents ($1,757.23).

Balance on hand July 1, 1890, one thousand and ninety-one dollars and ninety-six cents ($1,091.96).

A detailed statement by the treasurer is herewith appended.

Statement of F. H. Eggers, Treasurer of the State Pharmaceutical Examining Board.

DR.

1889.		
July 9,	To balance,	$1,598 44
17,	To cash H. B. Cochran,	331 50
Oct. 4,	To cash H. B. Cochran,	292 00
1890.		
May 7,	To cash H. B. Cochran,	627 25
		$2,849 19

CR.

1889.			
July 17,	By cash Alonzo Robbins,	warrant No. 66,	$75 37
	By cash A. B. Burns,	warrant No. 67,	91 71
	By cash H. B. Cochran,	warrant No. 68,	67 90
	By cash A. J. Tafel,	warrant No. 69,	56 55
	By cash F. H. Eggers,	warrant No. 70,	49 85
	By cash The Lancaster Examiner,	warrant No. 71,	40 80
	By cash H. B. Cochran,	warrant No. 72,	100 00
Oct. 15,	By cash The Lancaster Examiner,	warrant No. 73,	19 50
	By cash A. B. Burns,	warrant No. 74,	98 75
	By cash H. B. Cochran,	warrant No. 75,	93 75

Oct.	18,	By cash Alonzo Robbins,	warrant No. 76,	$112 74
		By cash F. H. Eggers,	warrant No. 77,	69 05
1890.				
Jan.	17,	By cash A. J. Tafel,	warrant No. 78,	28 45
		By cash A. B. Burns,	warrant No. 79,	86 25
		By cash Alonzo Robbins,	warrant No. 80,	81 83
		By cash H. B. Cochran,	warrant No. 81,	51 93
		By cash F. H. Eggers,	warrant No. 82,	95 45
		By cash Lancaster Examiner,	warrant No. 83,	39 60
May	9,	By cash H. B. Cochran,	warrant No. 84,	59 35
	16,	By cash Alonzo Robbins,	warrant No. 85,	189 95
		By cash A. B. Burns,	warrant No. 86,	85 80
		By cash A. J. Tafel,	warrant No. 87,	51 05
		By cash F. H. Eggers,	warrant No. 88,	79 75
		By cash Lancaster Examiner,	warrant No. 89,	31 85
				$1,757 23
		By balance,		1,091 96
				$2,849 19

Respectfully submitted.

F. H. EGGERS,
Treasurer State Pharmaceutical Examining Board.

ALLEGHENY, PA., *July 29, 1890.*

REGISTERED PHARMACISTS AND QUALIFIED ASSISTANTS,

REGISTERED FROM JUNE 30, 1889, TO JULY 1, 1890.

Registered Pharmacists.

NAME.	NO.	NAME.	NO.
Altman, W. H.,	4,485	Cleveland, Fred L.,	4,438
Adamson, Winfield S.,	4,533	Cheswright, James W.,	4,447
Aitken, John W.,	4,372	Clemson, Charles E.,	4,553
Armstrong, Wm. K.	4,349	Cliffe, Albert,	4,495
Anderson, Geo. H.,	4,356	Clapham, Hesser Chas.,	4,379
Angeny, Joseph S., Jr.,	4,448	Campbell, Harry M.,	4,390
Ashenfelter, W. J.,	4,568	Chandler, Wm. A.,	4,431
Bright, Annie L.,	4,450	Chambers, Brinton H.,	4,465
Birch, Margaret D.,	4,511	Carslak, M. A.,	4,549
Birch, Thomas J.,	4,509	Carberry, P. J. L.,	4,587
Byerly, Chas. H.,	4,477	Crawford, Luther L.,	4,699
Bryson, Lewis,	4,545	Cohen, Isaac,	4,353
Billings, F. J.,	4,589	Coughenour, David R.,	4,400
Billings, Geo. E.,	4,590	Colbert, Harry,	4,529
Bright, Wm. W.,	4,656	Corwin, J. H.,	4,560
Buck, Peter E.,	4,582	Coles, M. S.,	4,593
Buck, Will G.,	4,583	Cope, Thomas,	4,597
Buck, Frank L.,	4,584	Cope, Geo. W.,	4,599
Blair, Wm. H.,	4,385	Crouse, George J.,	4,656
Brallier, Geo. W.,	4,393	Cook, Francis W.,	4,688
Bauer, Louis G.,	4,408	DeWitt, Alpheus M.,	4,410
Ball, Archie L.,	4,444	Decker, Frank M.,	4,417
Brady, Harry F.,	4,478	Deiss, Wm.,	4,489
Braun, Frederick L.,	4,499	Decker, John W.,	4,567
Bachman, Mary,	4,506	Dekaley, H. L.,	4,579
Barnes, Wm. F.,	4,517	Devine, Geo. C.,	4,633
Bradenbach, Richard B.,	4,528	Dowmaux, Louis,	4,472
Bannen, Peter L.,	4,543	Donly, Clarence J.,	4,508
Bachman, Gustavus A.,	4,585	Dougherty, James R.,	4,535
Barker, James H.,	4,653	Dodd, Wm. S.,	4,638
Bateman, Wm. H. I.,	4,671	Dunn, John B.,	4,384
Bean, Oliver W.,	4,422	Durborow, Charles M. C.,	4,469
Bennum, Charles,	4,453	Dunlap, Sam R.,	4,484
Bebout, John J.,	4,544	Davis, Dexter C.,	4,566
Breininger, Mary A.,	4,563	Daugherty, S. Clark,	4,651
Besore, Abraham L.,	4,687	Edenborn, Chas. W. S.,	4,362
Bouse, A. N.,	4,344	Emerson, Worthington,	4,366
Brow, Homer,	4,445	Eggers, Edward E.,	4,412
Boas, David K.,	4,486	Ebert, Sarah E.,	4,497
Bodenhorn, Adam,	4,491	Elwell, Albert S.,	4,594
Brown, John K.,	4,512	Eicke, N. Marion,	4,342
Brown, B. Levi.	4,525	Edmunds, Cyrus,	4,643
Brown, Clark W.,	4,546	Ely, Harry B.,	4,419
Brown, George W.,	4,588	Eyster, Joseph,	4,659
Bowers, Charles E.,	4,617	Eyer, Harry B.,	4,663
Brown, Otis S.,	4,635	Farley, Harvey N.,	4,411
Bowman, Geo. McL.,	4,642	Fackley, Lewis H.,	4,423
Boyle, R. Raum,	4,658	Finck, Edward V.,	4,502
Bowman, John M., Jr.,	4,670	Field, Wm. S. N.,	4,602
Bocking, Gindo C.,	4,695	Fike, Giles A.,	4,662
Bonnell, Alexander C.,	4,701	Foulke, Samuel L.,	4,409
Bond, Ira L.,	4,680	Fruh, John,	4,458

REGISTERED PHARMACISTS—*Continued.*

NAME.	No.	NAME.	No.
Fruh, Mary E. S.,	4,680	Keck, Wm. Geo.,	4,387
Ferguson, Frank N.,	4,415	Keck, Harry E.,	4,388
Freeman, Chester C.	4,513	Kelly, Olive L.,	4,406
Felix, Ellwood S.,	4,571	Kelly, Clark N.,	4,518
Fletcher, Benj. K.,	4,616	Krell, Frederick B.,	4,524
Feidt, George D.,	4,694	Kepler, Daniel C.,	4,565
Giebner, Robert E.,	4,350	Kerlin, John H.,	4,575
Griffith, Matthew M.,	4,397	Keeler, Charles E.,	4,614
Griffith, Jos. T.,	4,641	Krebs, David T.,	4,640
Groome, John C.,	4,624	Keefer, Charles De W.,	4,686
Good, John F.,	4,632	Kendig, Allen J.,	4,675
Gotwalt, S. Horace,	4,682	Lisenring, Gibson H.,	4,337
Grube, Geo. W.,	4,424	Lize, Alexander A.,	4,359
Gallagher, James T.,	4,336	Liggett, Samuel J.,	4,434
Granger, Lewis E.	4,606	Litman, Geo. W., Jr.,	4,507
Galliger, Wm. M.	4,639	Lits, Walter R.,	4,581
Gmelin, Charles H.,	4,371	Lydell, James,	4,355
Greer, Harry L.,	4,401	Lynch, Wm. C.,	4,476
Grewer, Edward,	4,433	Lawrence, Mary L.,	4,510
Gerhard, Charles C.,	4,490	Lafferty, John H.,	4,556
Gibble, Elmer E.,	4,673	Lautenbacher, I. L.,	4,576
Hine, Marks P.,	4,470	Longstreet, Delavan W.,	4,370
Hill, W. B.,	4,562	Lovett, Emmor,	4,619
Hunter, James,	4,352	Lowenberg, Joseph,	4,627
Hunnell, Bird S.,	4,702	Myers, James H.,	4,426
Heilman, Robert B.,	4,374	Myers, Wilbur,	4,503
Helfrich, L. S.,	4,475	Mitchell, Robert H.,	4,439
Herwig, Emil M.,	4,505	Miller, Jacob,	4,446
Hertel, Fred. G.,	4,611	Millington, Joseph S.,	4,463
Hellmich, Maximilian,	4,646	Miller, Warren D.,	4,464
Heerlein, Arno W.,	4,655	Minnich, Luther W.,	4,494
Hogue, Maggie F.,	4,373	Moerk, Frank X.,	4,460
Holthouse, Albert W.,	4,389	Moorhear, Frank B.,	4,514
Hoke, Martin,	4,396	Moore, Wm. D.,	4,691
Housekeeper, Arndt K.,	4,558	Moeller, C. Adolph F.,	4,693
Hoover, Wilber T.,	4,569	Murphy, John F.,	4,631
Holtzhausser, Ludwig,	4,613	Maucher, Jos. V.,	4,351
Hostetter, Andrew G.,	4,700	Matlack, Granville T.,	4,425
Huntsman, Edwin S.,	4,428	Maris, Edward,	4,429
Humma, Henry J.,	4,697	Mattern, John W.,	4,441
Haverstick, M. C.,	4,341	Malpass, Wm. H.,	4,474
Harvey, Nathaniel C.,	4,364	Martindell, Wm. N.,	4,483
Haverstick Jos. B.,	4,377	Marshall, Thomas D.,	4,515
Hanon James B.,	4,402	Martin, David G.,	4,536
Hayhurst, Susan,	4,456	May, Rollin R.,	4,548
Hall, James C.,	4,596	Magill, Thomas,	4,660
Hamilton, Sylvester S.,	4,609	McCausland, R. James,	4,413
Hamberg, Samuel T.,	3,668	McCarty, John J.,	4,522
Harpel, Luther G.,	4,677	McCain, Stuart B.,	4,537
Ingram, Theodore E.,	4,430	McFarland, Winfield S.,	4,554
Ingram, George T.,	4,520	McCanley, John S.,	4,555
Jacoby, John W.,	4,623	McElfresh, J. A.,	4,574
Jones, Charles F.,	4,521	McKee, Joseph A.,	4,622
Jones, Nathan,	4,532	McClintock, Jesse R. B.,	4,598
Jones, Lysander M.,	4,628	McNitt, Gilbert F.,	4,605
Johnson, Wm. A.,	4,674	McGinness, John S.,	4,607
Jordon, Aldebert S.,	4,705	McCoy, Henry L.,	4,427
Kahnweiler Levi,	4,368	McCormick, James H.,	4,449
Klapp, Elmer A.,	4,437	McMullin, Andrew,	4,550
Kassom, Myron,	4,561	McClure, Wm. J.,	4,572
Kane, John S.,	4,591	McCullough, Madison L.,	4,650
Kantner, Harry B.,	4,667	Newlin, Benson C.,	4,382
Kitzmiller, Frank K.,	4,696	Newton, Alexander B.,	4,480
Knoepfel, Wm. H.,	4,416	Notenstine, S. R.,	4.492
Kelley, Leonard,	4,367	Owens, Wm. P.,	4,339
Keck, J. M.,	4,386	Ogden, James A.,	4,608

REGISTERED PHARMACISTS—*Continued.*

NAME.	NO.	NAME.	NO.
Parker, A. H.,	4,498	Stephens, Willie L.,	4,684
Patton, David B.,	4,540	Smith, Fred W.,	4,358
Peters, Geo. F.,	4,471	Stricker, Julius,	4,376
Perry, John,	4.539	Smith, Dennis C.,	4,391
Pensyl, P. H.,	4,637	Smith, Hays,	4,443
Pinchback, Pinckey N.,	4,360	Stickler, Harvey,	4.451
Phillips, Hugh,	4,479	Schlief, Wm.,	4,648
Prickitts, Frank W.,	4,570	Sibbald, John,	4,661
Pizzo, Francis,	4,580	Sipe, Geo. W.,	4,690
Pichel, Gustave,	4,627	Taggert, Leonard,	4,380
Phillips, Richard J.,	4,634	Tifft, Frederick A.,	4,578
Purnell, Howard,	4,455	Tribby, Elmer E.,	4.630
Pyatt, Anna M.,	4,488	Turner, Curtis W.,	4,418
Ramsey, Margaret E.,	4,534	Trumpfheller, H. H.,	4,552
Ralston, Geo. F.,	4,647	Tabar, Louis F.,	4,405
Rishel, John D.,	4,501	Thorn, P. D.,	4,461
Riche, Walter A.,	4,577	Thompson, Samuel H.,	4,468
Rudy, Jacob A.,	4,681	Thompson, Wm. O.,	4,564
Ryan, David S.,	4,365	Thompson, Samuel L.,	4,592
Reed, Joseph H.,	4,398	Thompson, Wm. F.,	4,689
Reese, David J.,	4,664	Thompson, Frank F.,	4,669
Roberts, Chas. H. B.,	4,343	Thompson, Ebenezer F.,	4,665
Ross, Chas. S.,	4,381	Usilton, Charles A.,	4,608
Rooker, Hermann S.,	4,435	Van Dyke, Wm. C.,	4,615
Robertscn, Archibald C.,	4,467	Woods, Charles,	4,338
Rockwell, Margaret A.,	4,526	Wolfe, Jonathan,	4,375
Rogers, Wm. B.,	4,557	Wolfe, C. J.,	4,383
Ross, Eben J.,	4,649	Woleslagle, John A.,	4,403
Rohrer, Howard,	4,654	Wray, Wm. S.,	4,440
Ross, H. Frank,	4,679	Ward, Christopher C.,	4,473
Strohm, Theodore B.,	4,345	Ward, J. M. B.,	4,496
Sommers, Richard M.,	4,361	Wagner, John O.,	4,600
Stokes, Andrew J.,	4,421	Wallace, Harlan L.,	4,644
Shope, Jacob,	4,586	Wenger, I. Lincoln,	4,340
Schroeter, Hermann N.,	4,610	Weida, Charles,	4,394
Sountag, Maximilian,	4,672	Weaver, Wm. W.,	4,420
Strohecker, Samuel M.,	4,685	Weiss, Williard M.,	4,454
Shomberg, Albert F.,	4,692	Weaver, James B.,	4,457
Schoff, J. John,	4,698	Wetherill, Abner T.,	4,462
Shafer, A. P. H.,	4,436	Weiser, Henry K.,	4,604
Schaffle, S. W. W.,	4,493	Weber, Wm.,	4,676
Straesser, Samuel,	4,500	Williams, Elizabeth,	4,399
Sands, Wm. H.,	4,504	Williams, Fred. T.,	4,404
Strang, Orville W.,	4,531	Whitaker, Wm. H.,	4,442
Sanderson, John T.,	4,542	Whitting, W. H.,	4,452
Sargent, John H.,	4,601	Winslow, Coulburn T.,	4,481
Shade, Daniel S.,	4,657	Wittiger, Hugo O.,	4,482
Sears, Roger W.,	4,354	Wildman, Carrie,	4,519
Stevens, Atherton B.,	4,392	Wilson, Matthew J.,	4,530
Stevenson, Geo. F.,	4,395	Wickersham, Samuel N.,	4,538
Seeler, Andrew J.,	4,414	Wilson, Jefferson H.,	4,573
Stevens, Bessie E.,	4,487	Wilbert, Martin I.,	4,620
Stevens, Sherman E.,	4,523	Young, Charles,	4,347
Streeter, N. Dunham,	4,547	Young, P. R. J.,	4,363
Stevens, Wm. A.,	4.551	Young, John,	4,378
Service, Alex. M.,	4,541	Young, Samuel P.,	4,466
Sheler, J. W.,	4,595	Young, Joseph B.,	4,527
Sheafer, E. Parke,	4,683	Zeigler, R. Wm.,	4,621

Qualified Assistants.

NAME.	No.	NAME.	No.
Arn, Gottfried,	1,478	Gordon, Jennie,	1,452
Aldenderfer, Chas. D.,	1,341	Gosh, Wm. E.,	1,464
Alleman, Frank,	1,495	Hazen, S. W.,	1,390
Albin, Samuel M.,	1,493	Harris, James A.,	1,396
Andriessen, Fred.,	1,329	Hess, Harry R.,	1,288
Arnold, Henry P.,	1,290	Hess, Earle L.,	1,476
Armstrong, Eugene C.,	1,386	Hickok, Geo. R.,	1,305
Baner, Louis D.,	1,371	Hill, Wm.,	1,321
Baldwin, Anna M.,	1,389	Hilpert, Wm.,	1,376
Baker, Thomas J.,	1,460	Hildebrand, Joseph S.,	1,422
Baskins, Mortimer H.,	1,473	Hildebrand, Harry C.,	1,477
Barlement, Philip L.,	1,489	Hollopeter, Martha E.,	1,402
Beavers, Frank W.,	1,303	Hoffman, Ella S.,	1,406
Blithe, Henry A.,	1,417	Homer, Charles M.,	1,413
Blithe, Wesley L.,	1,420	Hohman, T. Albert,	1,486
Britsch, George E.,	1,483	Howells, John J.,	1,497
Blose, Joseph C.,	1,353	Huber, Charles F.,	1,347
Bouse, Harry I.,	1,363	Hughes, Frank S.,	1,375
Blomer, Caroline A.,	1,407	Hartman, Wm. H.,	1,414
Bordner, Wm. H.,	1,456	Hanck, Clarence A.,	1,439
Bulger, Howard H.,	1,313	Haas, Joseph A.,	1.447
Bryson, Harry M.,	1,364	Hasson, Harry D.,	1,455
Brubaker, Frank B.,	1,384	Hammerquist, Chas. E.,	1,463
Bugg, Zack. W.,	1,465	Infield, James C.,	1,369
Butz, Alfred S.,	1,502	Irvin, Robert S.,	1,410
Burgoon, Wm. H.,	1,505	James, Benjamin T.,	1,331
Casey, Harry E.,	1,307	Jenkins, Wm. A.,	1,336
Caffrey, James P.,	1,351	Jenckes, Sydney J.,	1,349
Chapham, Benson G.,	1.360	Jones, Edward E.,	1,352
Calhoun, William M.,	1,393	Kasten, Wm. Henry,	1,320
Craig, Samuel B.,	1,411	Kachline, Frederick W.,	1,322
Cordes, Frank,	1,289	Kaye, Mary A.,	1,332
Coughenour, David R.,	1,324	Knapp, Hanford,	1,373
Cook, Robert S,	1,334	Krey, Louis A.,	1,312
Coz, Harriet F.,	1,357	Kessler, Francis E.,	1,490
Cottingham, Ambrose,	1,366	Kilgore, Edgar B.,	1,342
Colbert, Walter E.,	1,385	Klinefelter, Chas.,	1,359
Costin, John R.,	1,458	Kitchen, Charlie E.,	1,441
Colquhoun, John H.,	1,494	Kocher, David G.,	1,304
Cole, Percy L.,	1,504	Kolb, Charles A.,	1,443
Cullen, James K.,	1,433	Lack, Chas. E.,	1,350
Davis, James F.,	1,418	Lanmer, Jacob S.,	1,408
Davis, Harry M.,	1,314	La Dow, Addington,	1,431
Davis, Hugh F.,	1,335	Leinbach, Frank I.,	1,496
Dreisbach, Albert,	1,484	Lewis, Charles A.,	1,503
Dickinson, Geo. S.,	1,361	Lippincott, Norman D.,	1,475
Dougherty, M. M.,	1,301	Lorch, Carl P.,	1,340
Dornsife, Ulysses E.,	1,302	Long, Christian L.,	1,345
Edgar, James B.,	1,323	Louther, Snyder J.,	1,387
Eckels, Charles A.,	1,380	Lowry, Sydney A.,	1,428
Everhart, Augustus,	1,381	Lord, Leon S.,	1,435
Eberman, Mary G.,	1,388	Loelka, Alex. G.,	1,461
Elliott, James B.,	1,315	Long, Wm. H.,	1,461
Elston, Clarence W.,	1,299	Lumb, Charles T.,	1,297
Eby, Benjamin S.,	1,319	Lupus, Herman E.,	1,354
Faust, Wm. S.,	1,377	Lutz, Henry O.,	1,401
Frankelberger, Allen J.,	1,491	Mayo, Wilfred J.,	1,283
Fletcher, George,	1,333	Marcy, Lyrus E.,	1,383
Frey, Aaron K.,	1,470	Markell, Charles E.,	1,394
Forsythe, Bert S.,	1,344	Massinger, Charles J.,	1,416
Frey, Nelson B.,	1,339	Mackey, Edward S.,	1,425
Gardner, Eugene,	1,367	Main, Clinton E.,	1,432
Gressle, Franklin M.,	1,404	Metzer, Wm. A.,	1,318
Griffith, Joseph T.,	1,391	Mitchell, Henry,	1,291
Good, James R.,	1,284	Miller, John H.,	1,328

QUALIFIED ASSISTANTS—*Continued.*

NAME.	NO.	NAME.	NO.
Miller, Lynford C.,	1,337	Sawhill, Edgar P.,	1,397
Miller, Fred. G.,	1,338	Shapira, Isaac,	1,399
Missimer, Harry D.,	1,346	Stacks, Chas. M.,	1,409
Milliken, William H.,	1,466	Stanger, Lawrence A.,	1,426
Miller, Wm. H.,	1,457	Schaak, Milton F.,	1,436
Monaghan, Wm. J.,	1,479	Spang, Charles A.,	1,440
Mundorf, Harry K.,	1,348	Schaedley, Fred. A.,	1,449
Murray, Geo. W.,	1,356	Slaughter, Chas. H.,	1,471
Myers, Arnold A.,	1,488	Schilling, Paul C.,	1,442
McNabb, Henry S.;	1,306	Smith, B. Frank,	1,500
McFarland, Robert,	1,317	Smith, Harry A.,	1,293
McGrath, Joseph S.,	1,445	Siebert, Charles W.,	1,296
McGartney, Frank S.,	1,481	Strouse, Theodore H.,	1,300
McMeekan, Charles J.,	1,382	Stoke, Geo. W.,	1,316
McKee, Alexander O.,	1,421	Storey, J. Chester,	1,327
McMillan, Wm. C.,	1,423	Slough, Minnie H. A.,	1,395
McCloud, Myron,	1,326	Strohecker, Jos. C.,	1,476
McConnel, John P.,	1,419	Scott, George C.,	1,467
McCoy, Fred. A.,	1,480	Shumaker, Jos. C.,	1,295
McClure, Robert G.,	1,444	Sultzbach, Harry M.,	1,438
Neville, Stanton H.,	1,498	Shull, Carl W.,	1,453
Nichols, John B.,	1,372	Snyder, Wm. H.,	1,370
Nourse, Jennie,	1,392	Taylor, Agnes S.,	1,400
Overton, David W.,	1,378	Terppe, Julia,	1,310
Odbert, James H.,	1,454	Test, Daniel D.,	1,462
Owings, Osmond Y.,	1,879	Tiffany, L. Elbert,	1,472
Outen, Albert P.,	1,405	Tower, Theodore S.,	1,292
Patchell, David,	1,398	Thorn, Paul D.,	1,308
Plant, Edgar L.,	1,446	Thompson, Robert D.,	1,448
Pfenffer, Willie,	1,469	Thompson, Geo. M.,	1,451
Phillips, Lehman B.,	1,430	Thompson, O. J.,	1,499
Porter, Stephen G.,	1,365	Walz, Frank J.,	1,287
Quay, Frank, O.,	1,325	Westcott, Frank,	1,343
Randolph B. Alfred,	1,482	Webb, Horace G.,	1,362
Randal, Harry L.,	1,485	Westgate, Benj. H.,	1,374
Reed, James M. P.,	1,285	Weber, Herman,	1,403
Reed, Kenneth A.,	1,286	Weber, Frank C.,	1,434
Remmington, Samuel J.,	1,429	Whitman, Fred. E.,	1,309
Reidenbaugh, Elmer A.,	1,437	Whitling, Willis,	1,412
Reynolds, May,	1,468	White, Wm. N.,	1,424
Reuss, Wm. H.,	1,487	Woodall, Junius P.,	1,427
Riegraf, J. M.,	1,450	Woertz, Geo. A.,	1,459
Robinson, Zach W.,	1,415	Yost, Mary V.,	1,355
Spangler, Fred. A.,	1,330	Zeamer, Harry W.,	1,298
Stangl, Paul L.,	1,368		

Filed in the office of the Secretary of the Commonwealth, November 21, 1890.

APPENDIX H.

QUARANTINE, DISINFECTION, EPIDEMICS AND SPECIAL SOURCES OF DISEASE.

1. Quarantine.
    - (a.) Revised Cholera Regulations issued by the Local Government Board Great Britain.
2. Disinfection.
    - (a.) Sulphurous Disinfection, by Henry B. Baker, M. D., Michigan.
    - (b.) Inspection of Fumigating Steamer, "Louis Pasteur," of the U. S. Marine Hospital Service.
3. Epidemics.
    - (a.) Epidemic of Diphtheria at Weatherly, Carbon county.
    - (b.) Typhoid fever at Johnstown.
    - (c.) Typhoid fever at Lancaster.
    - (d.) Diphtheria at Middletown.
    - (e.) Diphtheria at Waterville, Lycoming county.
4. Special Sources of Disease.
    - (a.) Tin Canned Foods, by Benj. Lee, M. D., Secretary.
    - (b.) Test for Typhoid Fever.
    - (c.) Yellow fever at Womelsdorf
    - (d.) Public funeral at Catasauqua.
    - (e.) Reported case of Leprosy.
    - (f.) Foul water in the Allegheny.
    - (g.) Analysis of water from State College.
    - (h.) Paper on Diseases of the Eyes.
    - (i.) Hog Cholera.
    - (k.) Diagnosis of Disease.
    - (l.) Water Supply of Norristown.
    - (m.) Proposed Milk Ordinance in Philadelphia.
    - (n.) Disposal of Garbage.

1—QUARANTINE.

(a.)—REVISED CHOLERA REGULATIONS ISSUED BY THE LOCAL GOVERNMENT BOARD, GREAT BRITAIN, *28th August, 1890.*

To all Port Sanitary Authorities: to all other Sanitary Authorities as herein defined: to the Queen's Harbour Masters of Dockyard Ports: to all Officers of Customs: to all Medical Officers of Health of the Sanitary Authorities aforesaid: to all Masters of Ships: to all Pilots; and to all others whom it may concern.

WHEREAS, We, the Local Government Board, are empowered by Section 130 of the Public Health Act, 1875, from time to time, to make, alter and revoke such Regulations as to Us may seem fit, with a view to the treatment of persons affected with Cholera, and preventing the spread of Cholera, as well on the seas, rivers, and waters of the United Kingdom, and on the high seas within three miles of the coasts thereof, as on land; and may declare by what Authority or Authorities such Regulations shall be enforced and executed;

And whereas by Section 2 of the Public Health Act, 1889, it is enacted that Regulations of the Local Government Board made in relation to Cholera and Choleraic Diarrhœa, in pursuance of Section 130 of the Public Health Act, 1875, may provide for such Regulations being enforced and executed by the Officers of Customs, as well as by other Authorities and Officers, and without prejudice to the generality of the powers conferred by the said Section, may provide for the detention of vessels and of persons on board vessels, and for the duties to be performed by Pilots, Masters of vessels, and other persons on board vessels; provided that the Regulations, so far as they apply to the Officers of Customs, shall be subject to the consent of the Commissioners of Her Majesty's Customs;

And whereas by certain Orders dated the 12th day of July, 1883, and an Order dated the 21st day of April, 1884, We prescribed Rules and Regulations with a view to the treatment of persons affected with Cholera, and for preventing the spread of the disease, and it is expedient that such Orders should be revoked, and that further Regulations should be prescribed as herein-after mentioned, to which the Commissioners of Her Majesty's Customs have signified their consent so far as such Regulations apply to the Officers of Customs:

NOW THEREFORE, We, the Local Government Board, do hereby revoke the aforesaid Orders, except in so far as they may apply to any proceedings now pending, and We do, by this Our Order, and in exercise of the power conferred on Us by the Public Health Act, 1875, as amended and extended by the Public Health Act, 1889, and every other power enabling Us in that behalf, make the following Regulations, and Declare that they shall be enforced and executed by the Authorities herein-after named:—

Definitions.

Art. 1.—In this Order—

The term "Ship" includes vessel or boat;

The term "Officer of Customs" includes any person acting under the authority of the Commissioners of Her Majesty's Customs;

The term "Master" includes the officer, pilot, or other person for the time being in charge or command of the ship;

The term "Cholera" includes Choleraic Diarrhœa;

The term "Sanitary Authority" means every Port Sanitary Authority and every Urban or Rural Sanitary Authority whose district includes or abuts on any part of a customs port, which part is not within the jurisdiction of a Port Sanitary Authority;

The term "Medical Officer of Health" includes any duly qualified Medical Practitioner appointed by a Sanitary Authority to act in the execution of this Order;

For the purposes of this Order,—

(1.) So much of a customs port abutting on an Urban or Rural Sanitary District as is nearer to such District than to any other, and is not included within the jurisdiction of any Port Sanitary Authority, shall be deemed to be within such District;

(2.) Every ship shall be deemed infected with Cholera, in which there is or has been during the voyage or during the stay of such ship in a port in the course of such voyage, any case of Cholera.

I.—*Regulations as to Detention by Officers of Customs.*

Art. 2.—If any Officer of Customs, on the arrival of any ship, ascertain from the Master of such ship or otherwise, or have reason to suspect that the ship is infected with Cholera, he shall detain such ship, and order the Master forthwith to moor or anchor the same in such position as such Officer of Customs shall direct; and thereupon the Master shall forthwith moor or anchor the ship accordingly.

Art. 3.—While such ship shall be so detained, no person shall leave the same.

Art. 4.—The Officer of Customs detaining any ship as aforesaid shall forthwith give notice thereof, and of the cause of such detention, to the Sanitary Authority of the place to which the ship shall be bound, or where the ship shall be about to call.

Art. 5.—Such detention by the Officer of Customs shall cease as soon as the ship shall have been duly visited and examined by the Medical Officer of Health; or, if the ship shall, upon such examination, be found to be infected with Cholera, as soon as the same shall be moored or anchored in pursuance of Article 10 of this Order.

Provided, that if the examination be not commenced within twelve hours after notice given as aforesaid, the ship shall, on the expiration of the said twelve hours, be released from detention.

II.—*Regulations as to Sanitary Authorities.*

Art. 6.—Every Port Sanitary Authority and every other Sanitary Authority within whose district persons are likely to be landed from any ship coming foreign shall, as speedily as practicable, with the approval of the Chief Officer of Customs of the port, fix some place where any ship may be moored, or anchored, for the purpose of Article 10; and shall make provision for the reception of Cholera patients and persons suffering from illness removed under Articles 13 and 14. The place to be fixed as aforesaid, where any ship may be moored or anchored for the purpose of Article 10, shall be some place within the jurisdiction or district of the Sanitary Authority, unless the Local Government Board otherwise consent; in which case the place so fixed shall, for the purposes of this Order, be deemed to be within such jurisdiction or district.

Provided that in the case of any Dockyard Port for which a Queen's Harbor Master has been appointed the place where any ship shall be moored or anchored for the purpose of this Article shall from time to time be fixed by the Port Sanitary Authority with the approval of the Queen's Harbor Master instead of with that of the Chief Officer of Customs of the Port.

Provided also, that where, in pursuance of any of the above-cited Orders, places have been duly fixed for the mooring or anchoring of ships for the like purpose, such places shall be deemed to have been so fixed in pursuance of this Order.

Art. 7.—The Sanitary Authority, on notice being given to them by an Officer of Customs, under this Order, shall forthwith cause the ship in regard to which such notice shall have been given, to be visited and examined by their Medical Officer of Health for the purpose of ascertaining whether she is infected with Cholera.

Art. 8.—The Medical Officer of Health, if he have reason to believe that any ship coming or being within the jurisdiction or district of the Sanitary Authority, whether examined by the Officer of Customs or not, is infected with Cholera, shall, or if she have come from a place infected with Cholera, may, visit and examine such ship, for the purpose of ascertaining whether she is so infected; and the Master of such ship shall permit the same to be so visited and examined.

Art. 9.—If the Medical Officer of Health on making such examination as aforesaid (whether under Article 7 or under Article 8), shall be of opinion that the ship is infected, he shall forthwith give a certificate in duplicate in the following Form, or to the like effect, and shall deliver one copy to the Master, and retain the other copy or transmit it to the Sanitary Authority. He shall also give to the Local Government Board information as to the arrival of the ship, and such other particulars as that Board may require.

Certificate.

. . . . *day of* 189

. . . . SANITARY AUTHORITY OF . . . .

I hereby certify that I have examined the ship . . . ., of . . . ., now lying in the Port of . . . . [*or detained at* . . . .] and that I find that she is infected with Cholera.

. . . .

Medical Officer of Health [or Medical Practitioner appointed by the Sanitary Authority].

Art. 10.—The Master of any ship so certified to be infected with Cholera shall thereupon moor or anchor her at the place fixed for that purpose under Article 6, and she shall remain there until the requirements of this Order have been duly fulfilled.

Art. 11.—No person shall leave any such ship until the examination hereinafter mentioned shall have been made.

Art. 12.—The Medical Officer of Health shall, as soon as possible after any such ship has been certified to be infected with Cholera, examine every person on board the same, and in the case of any person suffering from Cholera or from any illness which the Medical Officer of Health suspects may prove to be Cholera, shall certify accordingly; and any person who shall not be so certified by him shall be permitted to land immediately on giving to the Medical Officer of Health his name and place of destination, stating, where practicable, his address at such place.

The name and address of any such person shall forthwith be given by the Medical Officer of Health to the Clerk to the Sanitary Authority, and such Clerk shall thereupon transmit the same to the Local Authority of the District in which the place of destination of such person is situate.

In this Article the term "Local Authority" means any Urban or Rural Sanitary Authority; and in the Administrative County of London, the Commissioners of Sewers, the Vestry under the Metropolis Management Act, 1855, of a Parish in Schedule A, and the District Board of a District in Schedule B to that Act, as amended by the Metropolis Management Amendment Act, 1885, and the Metropolis Management (Battersea and Westminster) Act, 1887, and the Woolrich Local Board of Health.

Art. 13.—Every person certified by the Medical Officer of Health to be suffering from Cholera shall be removed, if his condition admit of it, to some hospital or other suitable place appointed for that purpose by the Sanitary Authority; and no person so removed shall leave such hospital or place until the Medical Officer of Health shall have certified that such person is free from the said disease.

If any person suffering from Cholera cannot be removed, the ship shall remain subject, for the purposes of this Order, to the control of the Medical Officer of Health; and the infected person shall not be removed from or leave the ship, except with the consent in writing of the Medical Officer of Health.

Art. 14.—Any person certified by the Medical Officer of Health to be suffering from any illness which such Officer suspects may prove to be Cholera, may either be detained on board the ship for any period not exceeding two days, or be taken to some hospital or other suitable place appointed for that purpose by the Sanitary Authority, and detained there, for a like period, in order that it may be ascertained whether the illness is or is not Cholera.

Any such person who, while so detained, shall be certified by the

Medical Officer of Health to be suffering from Cholera, shall be dealt with as provided by Article 13 of this Order.

Art. 15.—The Medical Officer of Health shall, in the case of every ship certified to be infected, give directions, and take such steps as may appear to him to be necessary, for preventing the spread of infection, and the Master of the said ship shall forthwith carry into execution such directions as shall be so given to him.

Art. 16.—In the event of any death from Cholera taking place on board such ship while detained under Article 10, the Master shall, as directed by the Sanitary Authority or the Medical Officer of Health, either cause the dead body to be taken out to sea, and committed to the deep, properly loaded to prevent its rising, or shall deliver it into the charge of the said Authority for interment; and the Authority shall thereupon have the same interred.

Art. 17.—The Master shall cause any articles that may have been soiled with Cholera discharges to be destroyed, and the clothing and bedding and other articles of personal use likely to retain infection which have been used by any person who may have suffered from Cholera on board such ship, or who, having left such ship, shall have suffered from Cholera during the stay of such ship in any Port, to be disinfected or (if necessary) destroyed; and if the Master shall have neglected to do so before the ship arrives in port, he shall forthwith, upon the direction of the Sanitary Authority or the Medical Officer of Health, cause the same to be disinfected or destroyed, as the case may require; and if the said Master neglect to comply with such direction within a reasonable time, the Authority shall cause the same to be carried into execution.

Art. 18.—The Master shall cause the ship to be disinfected, and every article therein, other than those last described, which may probably be infected with cholera, to be disinfected or destroyed, according to the directions of the Medical Officer of Health.

III.—*Flag to be hoisted by Ships infected with Cholera.*

Art. 19.—The Master of every ship infected with Cholera shall, when within three miles of the coast of any part of England or Wales, cause to be hoisted the Commercial Code Signal Q, being a yellow flag, under the National Ensign, and shall keep the same displayed during the whole of the time between sunrise and sunset.

Given under the Seal of Office of the Local Government Board, this Twenty-eighth day of August, in the year One thousand eight hundred and ninety.

[L. S.] CHAS. T. RITCHIE,
President.

HUGH OWEN,
Secretary.

NOTICE.—The Public Health Act, 1875, provides by Section 130 that any person wilfully neglecting, or refusing to obey or carry out, or obstructing the execution of any regulation made under that Section, shall be liable to a penalty not exceeding *Fifty Pounds.*

Cholera Regulations.

LOCAL GOVERNMENT BOARD.
WHITEHALL, S. W., *30th August, 1890.*

SIR: I am directed by the Local Government Board to advert to section 130 of the Public Health Act, 1875, under which they are empowered to make regulations with a view to the treatment of persons affected with Cholera, and preventing the spread of the disease both on land and water.

Doubts having arisen as to the extent of the powers conferred on the Board by this section as respects authorities and vessels, it was provided by the Public Health Act, 1889 (52 & 53 Vict. c. 64), that regulations made by the Board in relation to Cholera in pursuance of the enactment above mentioned might provide for such regulations being enforced and executed by the officers of Customs as well as by other authorities and officers, and for the detention of vessels and of persons on board vessels, and for the duties to be performed by pilots, masters of vessels, and other persons on board vessels.

Under these circumstances the Board have thought it desirable to rescind the several Orders previously issued by them with a view to the treatment of persons affected with Cholera, and preventing the spread of the disease, and to prescribe fresh regulations on the subject. Copies of the new Order are enclosed. It has been so framed as to apply to every Port Sanitary Authority as well as to every Urban or Rural Sanitary Authority whose district includes or abuts on any part of a Customs Port, which part is not within the jurisdiction of a Port Sanitary Authority. The necessity for issuing special Orders in certain exceptional cases has thus been obviated.

In the main the regulations prescribed by the Order are the same as those previously in force, and the only points to which it appears requisite to draw attention are the following:

Under Article 6 of the Order it is the duty of every Port Sanitary Authority and of every other Sanitary Authority within whose district persons are likely to be landed from any ship coming foreign, *to fix some place where any ship certified to be infected with Cholera may be moored or anchored.* A proviso has been added to the Article to the effect that where, in pursuance of any of the Orders now revoked places have already been fixed for the like purpose, such places shall be deemed to have been so fixed for the purpose of the Order now issued.

Article 9 requires *the Medical Officer of Health, after examining a ship* *infected with Cholera, to forward to the Board information as to the arrival of the ship, and such other particulars as they may require.*

Under Article 12 *any person on board a ship infected with Cholera, who is not certified by the Medical Officer of Health to be suffering from Cholera, or from any illness which the Medical Officer of Health may suspect to be Cholera, is to be permitted to land on giving to the Medical Officer of Health his name and the place of his destination, and also, where practicable, his address at such place.* Having obtained this information, it will be the duty of the *Medical Officer of Health forthwith to report the same to the clerk to the Sanitary Authority, who is required thereupon to transmit the particulars to the Local Authority of the district in which the place of destination is situate.* By the term "Local Authority" in the Article is meant any Urban or Rural Sanitary Authority, and in the Administrative County of London the Commissioners of Sewers, the Vestry or District Board under the Metropolis Management Acts, and the Woolwich Local Board of Health.

The Board think it important that a Local Authority should be made aware that a person has come into their district, who, though not himself certified as being infected with Cholera, has come from an infected ship, and the Board trust that the requirements of this Article be strictly complied with.

By Article 19, *the master of every ship infected with Cholera is required when within three miles of the coast, to cause to be hoisted the Commercial Code Signal Q, being a yellow flag, under the national ensign, and to keep the same displayed during the whole of the time between sunrise and sunset.*

The term "master," as will be seen from Article I, of the Order includes the officer, pilot, or other person for the time being in charge of the ship.

The Order is, of course, designed for the protection of the English shores from the introduction of Cholera, and as cases of the disease are now occurring on the Continent, the Board trust that Sanitary Authorities on the sea-board will use the utmost vigilance in seeing that the provisions of the Order are efficiently and strictly complied with.

I am, Sir,
Your obedient Servant,
HUGH OWEN,
Secretary.

To the Clerk to the Sanitary Authority.

Cholera Regulations—(Rags from Spain)—General.

To all Port Sanitary Authorities; To all Urban and Rural Sanitary Authorities: To all Officers of Customs; To all Medical Officers of Health of the Sanitary Authorities aforesaid; To all Masters of Ships; And to all others whom it may concern.

WHEREAS, Cholera is now prevalent in certain parts of Spain, and it is expedient that Regulations should be made, as hereinafter mentioned, with reference to Ships having on board bales of Rags from that Country;

And whereas, the Commissioners of Her Majesty's Customs have signified their consent to the Regulations herein contained so far as the same apply to the Officers of Customs:

NOW THEREFORE, We, the Local Government Board, do, by this Our Order, and in exercise of the power conferred on Us by Section 130 of the Public Health Act, 1875, and by the Public Health Act, 1889, and every other power enabling Us in this behalf, make the following Regulations, and declare that they shall be enforced and executed by the Authority or Authorities herein-after specified:—

Article 1.—In this Order—

The term "Sanitary Authority" means Port Sanitary Authority, Urban Sanitary Authority, or Rural Sanitary Authority;

The term "Ship" includes vessel or boat;

The term "Officer of Customs" includes any person acting under the authority of the Commissioners of Her Majesty's Customs;

The term "Master" includes the officer, pilot, or other person for the time being in charge or command of a ship.

Art. 2.—From and after the Twelfth day of September, One thousand eight hundred and ninety, and until the Thirty-first day of December, One thousand eight hundred and ninety, no rags from Spain shall be delivered overside, except for the purpose of export, nor landed in any port or place in England or Wales.

Art. 3.—If any rags shall be delivered overside or landed in contravention of this Order, they shall, unless forthwith exported, be destroyed by the person having control over the same, with such precautions as may be directed by the Medical Officer of Health of the Sanitary Authority within whose jurisdiction or district the same may be found.

Art. 4.—All masters of vessels, consignees, and other persons having control of any rags prohibited under this Order from being delivered overside, except for the purpose of export, or landed, are required to obey these regulations.

Art. 5.—All Officers of Customs are empowered to prevent the delivery overside or landing of rags in contravention of this Order.

Art. 6.—It shall be the duty of the Sanitary Authority to take proceedings against masters of ships, consignees, or other persons having control over any rags, who shall wilfully neglect or refuse to obey or carry out, or shall obstruct the execution of any of these regulations.

[L.S.] Given under the Seal of Office of the Local Government Board, this Fourth day of September, in the year One thousand eight hundred and ninety.

S. B. PROVIS,
Assistant Secretary.

CHAS. T. RITCHIE,
President.

NOTICE.—The public Health Act, 1875, provides by Section 130 that any person wilfully neglecting, or refusing to obey or carry out, or obstructing the execution of any regulation made under that Section shall be liable to a penalty not exceeding *Fifty pounds.*

2—DISINFECTION.

(a.) SULPHUROUS DISINFECTION.

By HENRY B. BAKER, M. D., *Michigan.*

LANSING, MICH., *August 23, 1890.*

E. B. FRAZER, M. D.,
Secretary of the State Board of Health, Wilmington, Del.:

DEAR DOCTOR: Your letter of August 18, acknowledging the receipt of a copy of my letter to Dr. Duffield (giving results of experience of health officers in Michigan, and an account of the experiments by Pasteur, Roux, Dujardin-Beaumetz and others relative to sulphurous disinfection) is before me. You ask me for further opinion, and refer to the report of the Maine State Board of Health for 1889, page 251, and Dr T. Mitchell Prudden's estimate of the want of value of sulphurous disinfection.*

There are at least two valid objections to the acceptance of Dr. Prudden's conclusions to which you refer: (1) His experiments dealt with a micro-organism which seems to be different from the one most generally accepted as the probable cause of diphtheria. Therefore he may or may not have been dealing with a micro-organism causing diphtheria. (2) The quantity of sulphur burned, the strength of the sulphurous acid fumes which he employed *is not stated.* It having been proved by actual experience with disease, and by other laboratory experimenters (Pasteur, Roux, Dujardin-Beaumetz, Valling, Legouest, Polli, Pettenkofer, Dugall, Fatio, Pietra Santa), that sulphurous acid gas is *not always* a disinfectant when employed in small proportions, and that it

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*American Journal of the Medical Sciences, May, 1889, p. 470.

is a disinfectant when employed in large proportions, such as result from the burning of three pounds of sulphur to each thousand cubic feet of air-space, no different conclusions should be reached from Doctor Prudden's experiments as published.*

You mention that Dr. W. H. Welch, of Baltimore, "enters his protest" against disinfection by sulphurous acid gas. I respectfully submit that entering a protest should count for very little in science as against results of actual, practical experience in the restrictions of diphtheria; it should not even take rank with definite statements of results of laboratory experiments.

Laboratory experiments are very valuable, but they need to be repeated, by the same observer and by other observers, in order to eliminate errors due to accidental and incidental conditions.

It is not easy to make laboratory experiments which shall conform to or correctly represent average conditions in actual outbreaks of disease. That is probably one reason for the discrepancies in laboratory experiments, and for the disagreement of some laboratory experiments with practical experience with disease. One reason for this last disagreement may be that micro-organisms which, after subjection to a disinfectant, may yet have sufficient vitality to re-produce in a laboratory where *the most favorable conditions are supplied* could not possibly do so in the human throat, or elsewhere in the human body, because of the well-known power of the fluids of the body to destroy micro-organisms, as proved by Doctor Prudden's and other laboratory experiments following, but not confirming Metschnikeff's doctrine of the phagocytes.

Progress would be more easy, more rapid, and the backward and forward movements less frequent if experimenters in laboratories would be more careful in stating the details of their work.

The interpretation of the results of laboratory experiments, and the determination of the bearing which they should have upon practical affairs is an extremely difficult work, and one in which there is very great liability to error.

Practical health officers need to employ a *gaseous* disinfectant that shall at once reach all surfaces, ledges, cracks, drawers and receptacles of dust wherever it may be in a room, that shall permeate all articles sufficiently permeable to admit disease-causing micro-organisms, that will not necessitate too much labor in the removal of furniture or other articles, and that shall have power to destroy or sufficiently weaken the vitality of the "germs" of such diseases as diphtheria and scarlet fever, and occasionally small-pox, as they are usually distributed in the sick-room, and that shall not destroy family portraits and similar articles. Only two such disinfectants are prominently before us for choice, chlorine and sulphurous acid gas. Of these two, sulphurous acid gas is made in proper quantity, with more certainty, and less trouble than is chlorine

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*American Journal of the Medical Sciences, May, 1889, p. 470.

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gas; and, at present, I regard the weight of evidence in its favor as equal to that relative to chlorine gas concerning which not so much evidence has been published. Practical experience in Michigan proves that by isolation of first cases of diphtheria, and disinfection of premises after death or recovery therefrom, by fumes of burning sulphur, etc., four-fifths of the cases and deaths which would otherwise occur from that disease are prevented. If there is any other way of disinfection or any other proceedure that can be shown to reduce the cases and deaths more than the four-fifths, and down to less than an average of two and one-third cases and six-tenths of one death to each outbreak, I am exceedingly desirous of knowing what it is. But inasmuch as that is the recent experience in Michigan (outside of the great cities), it does not seem best to give up the methods employed until evidence of a better method is produced.

Meantime I would advise a continuance of sulphurous disinfection, for the purposes for which it is applicable, and for which it is greatly needed as stated above, *not* including the disinfection of excretions from the patient for which chlorinated lime or liquid is applicable, nor of bits of diphtheritic membrane which should be destroyed by fire as should also all rags and everything else not too valuable, used about a patient, and all clothing, bed-clothes, etc., that can profitably be boiled should be so treated.

Very respectfully,
HENRY B. BAKER.

(b.) INSPECTION OF FUMIGATING STEAMER, LOUIS PASTEUR, OF U. S. M. H. S.

On the 11th of April, the secretary visited Wilmington, Delaware, and made an inspection of the new fumigating steamer, Louis Pasteur, being constructed at the Pusey & Jones Company's Works, and intended to be placed at the quarantine station at the mouth of Delaware Bay. This vessel is provided with a sulphurous oxide furnace designed expressly for her by Surgeon Kinyon. The fumes from this furnace are driven by a powerful blower, through appropriate hose, into every part of the ship or space to be disinfected. She has also a pump and engine intended especially for flushing a vessel with solution of bichloride of mercury—cuts of the vessel are herewith submitted.

3—EPIDEMICS.

(a.) EPIDEMIC OF DIPHTHERIA AT WEATHERLY, CARBON COUNTY.

EASTON, PA., *November 25, 1889.*

BENJAMIN LEE, M. D.,
Secretary State Board of Health, Philadelphia:

DEAR DOCTOR: I have just returned from an inspection of Weatherly, Carbon county, Pa., in compliance with your instructions of the 19th of November.

I find that the disease has been more prevalent in the past than just at present, that for an indefinite number of years past there have been, at times, cases of the disease, but the present epidemic seems to date back about three years. One of the physicians, Dr. Long, opened his office in Weatherly in the summer of 1886; shortly after his arrival there were cases of diphtheria in a neighboring settlement, and the cases approached to within about two miles of the borough. While no conclusive evidence was obtained that there was a direct communication between these cases and the first happening in Weatherly, still there is a strong probability that such was the case. In 1887 the borough authorities were in need of some ground to fill up a road, this they obtained from a low damp place, a pond at times which received the surface water of quite a territory, and all the cases of this year were found in this part of the town, or were very directly traced to the cases located there. Since the disease has obtained a foothold, each case has very strong evidence of being received directly from some other case, *e. g.*, a child dies of diphtheria, the father of the child sells the cradle with its bedding in which the child lay while sick, and the child of the purchaser sickens and dies after using the cradle; many histories giving evidence as direct as this were given me.

There is but one undertaker in the place, and from his lists, with the aid of the physicians, I have been able to gather quite complete statistics of the deaths.

The population of the borough is estimated at about 3,500, all of the death from diphtheria were from this population, while the total number of funerals include deaths of the country round employing this undertaker, consequently the ratio is a higher one than is shown by the figures.

In 1887 out of one hundred and nine funerals forty-two were of those who died from diphtheria.

In 1888 out of seventy-one funerals forty-five were of those who died from diphtheria.

In 1889 out of ninety-one funerals thirty-nine were of those who died from diphtheria.

At present five houses are quarantined, in three of which the danger is about passed.

The borough and school authorities and the physicians have been trying to fight the disease in the proper way. The superintendent of the schools has been kept informed of the cases from morning to morning, and he refused admission in the schools to any member of a family where there was a case of diphtheria; this was also the rule of a silk mill in the place employing about 300 girls. The borough authorities have endeavored to isolate the families, and have forbidden church funerals, on the whole they have kept the town in a fair sanitary condition. They obtained from the board and furnished to every family a copy of circular number 19. The chief cause of the spread of the disease seems to be the carelessness of the people, and the lack of proper disinfection.

The town is situated on the hillsides of both sides of the valley through which the Black creek runs, the valley is quite narrow and for the most part there is an ample fall for most excellent surface drainage, and for flushing the gutters. The stream is a rapid mountain stream, draining the coal mines, consequently containing a large amount of sulphuric acid, killing all life in the stream. It is an exceptionally fine stream to receive the drainage of a town. The water supply is twofold, first, individual wells, and, second, from the reservoir of the water company, this is some 200 to 250 feet above the town, and is supplied with water from mountain streams, where, I am assured, there is no one residing, so that there is no chance of contaminating the water except possibly from vegetable matter. I visited the reservoir, but not the source of supply.

Generally, then, the authorities and the more intelligent class of citizens have endeavored to take every precaution, but they have not been strict enough in compelling a quarantine. I think if they would insist upon this and the proper disinfection of clothing, etc., they would be soon able to get control of the disease. I have sent the chief burgess a copy of the model ordinance, urging them to put it in force. They seem to think that they have done all that public sentiment will permit them, and I would suggest that you would send a communication to their newspaper—*The Weatherly Herald*, Mr. Percy E. Faust, editor—upon the necessity of strict quarantine, and of efficient disinfection, as an aid to them in their efforts.

From quite a thorough inspection of that part of the town where the disease has been located this year, I find the following decided nuisances:

I. On the property of Mr. C. B., on Second street—

a. An extremely filthy pig-pen, the washings from which flow down upon the kitchen porch of a dwelling house on the rear of his lot, where there has been a case of diphtheria.

b. A privy vault so full that it is overflowing, and the surface drainage from this overflow is directly on a line with the well of a neighbor which is in constant use.

c. An abandoned privy vault, which has been boarded over with floor boards, without any covering with earth, and is now full of water, possibly to overflow with the first rain.

The filth of these should be removed and disinfectants freely used. It might also be well to caution Mr. H., the owner of the well, of the possible danger from using the well.

II. On the property of F. E., on Fourth street, in whose house were cases of diphtheria last winter, the discharges being, in all probability, thrown down a privy, which is now abandoned, the house placed over a new pit and the old hole simply covered with shavings. This should be covered over with earth and mounded to allow for settling.

Since there is such an excellent supply of water so easily obtainable, I would also suggest that the people be recommended to abandon the using of the well water as a possible source of danger, although I was not able to trace any evil effect from the use of the well waters.

There were several places where I was asked to suggest plans for the better removal of water from the kitchen, sinks, etc., and I think that they will be looked after without any further instruction.

I have to acknowledge the cordial co-operation of the physicians, borough authorities and clergy, enabling me to complete the inspection in a day.

Respectfully submitted.

CHARLES MCINTIRE, JR.,
Medical Inspector, Lehigh district.

SUPPLEMENTARY REPORT.

[From the *Weatherly Herald*, December 9, 1889.]

The following is self-explanatory. The suggestions offered by the board, although very simple, are no doubt effective, and every citizen in Weatherly should do all in their power to help fulfil them:

OFFICE OF SECRETARY OF BOARD OF HEALTH,
PHILADELPHIA, *December 4, 1889.*

Editor Herald, Weatherly, Pa.:

DEAR SIR: An inspection of your town recently made by Dr. Charles McIntire, medical inspector of the Lehigh district, reveals some startling facts with regard to the prevalence of diphtheria in your borough during the last three years. In a population of about three thousand five hundred, one hundred and twenty-six deaths from diphtheria are recorded, constituting nearly one-half of your entire mortality. Such a loss of life from a disease which is recognized by all sanitarians as being preventable, is truly appalling and indicates a gross disregard of precautions of most ordinary kind.

Your town should be extremely healthy; it is well situated for surface drainage, the creek which runs through it contains such an amount of acid as to neutralize all foul matter which it receives. You have an admirable water supply from a reservoir supplied by pure mountain streams. It is evident, therefore—

First. That communication between families in which the diseases exists, and those which are free from it, must have prevailed to a great extent.

Second. That clothing and other articles which have become infected by the poison of this disease have not been destroyed or disinfected as they should have been.

Third. That collections of filth have been permitted to take place in connection with house-drainage, pig-pens, overflowing and abandoned vaults and so forth.

I am given to understand that the borough authorities have not been neglectful of their duty in this matter, and my object in addressing you is to give them all the support which the state board of health can render, in insisting upon strict compliance with their instructions.

I would suggest that all filthy pig-pens be removed, and the ground which they occupied be disinfected with chloride of lime; that overflowing vaults and outhouses be emptied and disinfected; that all abandoned vaults be emptied, disinfected and filled up with clean earth; that the use of well-water for drinking be abandoned where it is possible, and that in all other cases the users be instructed to boil it for household purposes.

Very respectfully,
BENJAMIN LEE,
Secretary State Board of Health.

(b.) THE OUTBREAK OF TYPHOID FEVER IN JOHNSTOWN, PA.

By GEO. W. WAGONER, M. D., *of Johnstown*,
Late Deputy Medical Inspector to the State Board of Health.

At the time of the ever memorable flood of May 31, 1889, there was not, to the best of my knowledge, a single case of typhoid fever in Johnstown. When the mighty rush of waters came, bearing upon its bosom the bodies of its human and animal victims, together with the filth of the miles of territory over which it swept in awful fury, the course of the torrent was held in check by the stone bridge long enough to allow all the organic matter to be deposited over a comparatively small area. In this district the greater proportion of the citizens of Johnstown resided before the flood, and after the work of destruction had been done, the wretched survivors returned to the sites of their former homes and began the gigantic task of making them habitable or building up new ones. They found masses of *débris* over the familiar places, which, appalled by their magnitude, and sickened them at heart when they realized that in the mass were the bodies of their dearest kindred and friends. Over and through it all was a most tenacious mud, from which foul odors arose continuously. In the dark days which followed, the citizens were deprived of many of the common necessaries of life to which they were formerly accustomed; they were crowded together so that all the comforts of home life were impossible to obtain; the character of their food was entirely changed; they were wrought up to the highest nervous tension, and lived with a feverish anxiety which was exhausting in the extreme. And then a persistent drizzling rain kept the whole valley shrouded in a mist, and added to the intense discomforts of life in this sorely-stricken district. From such a maze of unhappy circumstances it would be reasonable to expect the development of diseases, which would spread with rapidity, and flourish into malignancy, because all the conditions were so favorable. But it is a fact, which deserves to be remembered with profound gratitude, and recorded with feelings of honest pride, that the most virulent diseases did not spring forth to continue the harvest of death among a depressed people, and that those diseases which were met with were mild in character and easily controlled. This satisfactory condition of the public health was not the result of happy chance, but was the legitimate outcome of thorough, persistent and intelligent application of all the principles and methods of sanitary science applicable to the case. The state board of health was equal to this unparalleled emergency, and was unrelenting in its efforts until all the gross causes of disease were thoroughly removed. It should not be supposed, however, that there was no sickness in the flooded district. On the contrary, there was enough of an abortive character to indicate what might have occurred had not disinfection been so thoroughly enforced.

The first case of typhoid fever, after the flood of May 31, was observed on June 10, 1888. It was located, however, in Stony Creek township, two miles from the town, in the open country; several hundred feet above the highest level of the flood and far away from any possible contamination by it. It occurred in a farm house, and the physician in attendance states there were seven other cases following, which were probably infected by it. The attending physician does not venture an opinion as to the origin of this case, but there is evidence to indicate that there were cases of fever in this neighborhood a short time before the flood. The people used spring water. On June 21 another physician reports his first case, as occurring in the same locality and among the neighbors and friends of the case originating on June 10, 1889. He has knowledge of six cases spreading from his first case. He mentions as the probable cause of the outbreak of fever in this locality, that the farmers stored and washed flooded goods on their premises. But if this were a sufficient cause for the origin of the fever, it should also have developed at an early date in the flooded district, and among the people who were constantly handling the same soiled goods. The earliest date given for the development of a case in the flooded district, positively diagnosed as typhoid fever, is July 29, 1889, two months after the calamity.

Some of the farmers living in Stony Creek township, and who had the disease in their families, were engaged in the dairy business. They all depended upon springs for their water supply. They distributed large quantities of milk to Moxham, a thriving suburb of Johnstown, which was not damaged by the flood, and to which large numbers of the homeless sufferers fled for refuge. The water supply of the farming district does not communicate with that of Moxham. It is a fact that milk was distributed to Moxham from houses in which death had occurred from typhoid fever. On June 21st the first case is reported from Moxham, and the physician has knowledge of six other cases developing in the immediate vicinity. Another physician reports his first case in Moxham as occurring on July 1st, with ten following soon after. Another physician had his first case in Moxham on July 15th, with ten following. Each of these physicians attributes the development of the disease to impure spring water. The water supplied to the case developing on July 1st was analyzed and found to be full of impurities. It is stated that old clothing and flood goods were washed above this spring and consequently contaminated it with the poisonous germs of typhoid fever. While this may be the fact, yet it seems strange that the disease did not develop at a very early date after the flood, among the hundreds of people who were continuously in contact with the most concentrated filth in the devasted region. It is stated of the case developing July 15th, that the water supply of the family was drawn from a spring located on lower ground and within thirty yards of a neighbor's spring, in which the clothing and bedding of a patient dead with typhoid fever had been washed a few days previous to the outbreak of the disease in the family. The connection between these two outbreaks seems undoubted.

Four other physicians report their first cases as occurring, one on July 1st, another on July 6th, another on August 11th and the fourth on September 1st. They were all in widely separated localities, but in each case the patient had been employed at Moxham and drank of the water found there. These facts are very significant, especially when it is remembered that Moxham is a new town, built upon sloping ground, and at that time depending upon surface springs and wells, and surface drainage. These conditions were absolutely unavoidable, however, in a town of such rapid growth as Moxham. The defects are being overcome as rapidly as time and money will allow. Given a community situated as Moxham is, deposit in it the germs of an infectious disease, and it must of necessity spread in [illegible] It is remarkable, indeed, that the disease did not become much more general in Moxham than it did. Three of the four cases which appear to have contracted the disease in Moxham, each became the center of a new outbreak in their own localities. The home of one of these patients was in a country village two miles from town, and his sickness was followed by that of four other persons. These people used well water. One of the other cases was followed by two more. The third by three new cases. The fourth case infected at Moxham was not followed by any new cases among those in immediate contact with it. The water supply in the two latter instances was drawn from the general system of Johnstown, which proved at all times to be comparatively good.

It seems justifiable to conclude that the original center of the disease was in the farming community in Stony Creek township, that the flood had no influence upon its development in that locality; that the germs of the disease were transported in the milk supply to Moxham; that by reason of the favorable natural conditions of Moxham it spread somewhat rapidly and was distributed from thence to widely separated sections of the Conemaugh valley. If these conclusions be correct it is quite easy to understand how the disease progressed gradually but surely into all parts of the flooded district. In reply to a number of inquiries concerning the cause, development, location and number of cases treated since the flood, fifteen of the twenty-eight physicians have kindly furnished me with their experience with the so-called typhoid fever. I have also had access to the case book of the Philadelphia Red Cross Hospital, which was established in Johnstown and in which so much was done to aid the sick. From these sources 461 cases are reported with a total mortality of forty. These figures indicate one of two things, either that the disease was very mild in character and the mortality exceptionally low, or that cases have been included in the list which do not properly belong there. Forty deaths in 461 cases of well marked typhoid fever was a mortality of only 8.7 per cent., while the recognized mortality rate in this country of all types of the disease is between fifteen and twenty per cent. Assuming that all the deaths reported were genuine cases of the fever, and calculating the mortality at the lowest recognized percentage, the forty deaths would be fifteen per cent. of 266 cases of fever.

There is an honest difference of opinion among our physicians as to the true nature of the disease. One of the reporters states in his reply to my question. "I call it typho-malarial fever;" and very justly too, for in his series of forty cases there is only one death. It might readily be conceded that the malarial element must have predominated in the 210 cases reported by seven observers, in which series there were only eleven deaths. The thirteen physicians who did not reply to my inquiries certainly treated their share of the disease, but it is quite likely their experience would have corresponded with the reports received.

But it must not be supposed there was no typhoid fever in the Conemaugh valley during the past summer. On the contrary, there have been many cases in which the nose bleed, the typical range of temperature, the eruption, the profound prostration, the bowel symptoms, and quite frequently, the hemorrhages resulting in death, all proved beyond controversy the presence of the disease. A large proportion of the cases in Stony Creek township and Moxham were of this character. I believe it can fairly be claimed, however, that the disease was not nearly so prevalent as the public press maintained, or even as the number of cases reported in this paper would seem to indicate.

Another point: these cases were not all in the flooded district. One hundred and ninety were entirely outside of it, and of this latter number, forty-five were far enough away to be located "in the country." In addition to all these cases reported as typhoid fever there was a large amount of sickness treated, which was generally diagnosed as "malaria." This fact would also serve to throw doubt upon the correctness of the diagnosis of typhoid fever in some cases, for a severe attack of "malaria" under such wretched conditions as our people endured, would cause an amount of depression which might justify the term "typhoid" as descriptive of the symptoms, while the patient might be entirely free from the specific poison of typhoid fever.

The majority of the reporters agree that the flood had no direct effect upon the origin of the fever, that is to say, that the fever did not develop solely on account of the flood. They all agree that the great deposits of filth in the valley, the sudden and radical change from the peace and comforts of life, to the depressing miseries of mental and physical suffering, the overcrowding and coarse food, were all indirect factors in the progress and spread of the disease.

There is also a concurrence of opinion among the larger number of the reporters, that the sanitary condition of the valley is fairly good. They remember its condition as the flood left it, and the difference to-day is amazing. They do not mean that the present sanitary condition is satisfactory, for all desire it should be better, and advise the energetic prosecution of sanitary work on the line so satisfactorily followed by the state board of health during the summer. They know there is danger lurking in all corners of the flooded area, and they look forward to future epidemics of infectious diseases with positive dread.

I desire to acknowledge my indebtedness for many of the facts embodied in this report to A. N. Wakefield, M. D., W. E. Matthews, M. D., W. W. Waters, M. D., B. L. Yeazley, M. D., G. B. Porch, M. D., J. W. Hamer, M. D., J. C. Sheridan, M. D., W. N. Pringle, M. D., F. T. Overdorff, M. D., H. F. Tomb, M. D., E. L. Miller, M. D., Horace E. Kistler, M. D., W. J. George, M. D., H. F. Beam, M. D., and the officials of the Red Cross Hospital. These gentlemen kin[illegible] questions and gave me the results of their valuable experience, which are here presented for the consideration of the Board.

Form used in obtaining data for the preceding paper:

"DEAR DOCTOR: At the request of Dr. Benj. Lee, secretary state board of health, I have undertaken the compilation of facts relating to typhoid fever in the Conemaugh valley since May 31, 1889. You will oblige me very much by answering the following questions on the enclosed slip and returning it to me not later than December 16, 1889.

"Very respectfully,
"GEORGE W. WAGONER, M. D.,
"*No. 31 Morris street.*

Date of first case, since May 31, 1889.

Location of first case, since May 31, 1889.

Did the disease spread in this locality, if so, how many cases?

Character of water supply in first case.

Your opinion as to cause of the development of your first case of fever.

Total number of cases of typhoid fever treated from May 31, 1889, to date.

Number of these in flooded district.

Number outside.

Number in country.

Number of deaths in your list of cases.

In what manner, in your opinion, did the flood of May 31, 1880, affect the origin, progress and spread of typhoid fever?

Your opinion as to the sanitary condition of the Conemaugh valley at the present time, and the precautions which should be taken to insure its healthfulness in the future.

TABULAR STATEMENT OF CASES OF FEVER *Occurring in Johnstown and Surrounding Country During the Summer and Autumn of 1889.*

Report number.	Date of first case.	Location of first case.	Spread from first case.	Water supply of first case.	Total number of cases treated.	Number of these in flooded district.	Number outside flooded district.	Of these outside in country.	Deaths.
1, ...	June 10, 1889, ...	Stony creek township, and two miles from town, . .	7	Spring, ...	26	9	17	10	2
2, ...	July 1, 1889, ...	Moxham, ...	10	Spring, ...	25	10	15	None.	2
3, ...	July 16, 1889, ...	Brownstown, on hill one mile from town, ...	1	Good (either spring or well), ...	10	8	2	None.	2
4, ...	August 23, 1889, ...	East Conemaugh, ...	Spread to some extent.	Well, ...	8	8	None.	None.	None.
5, ...	July 29, 1889, ...	Johnstown borough, ...	4	Well, ...	4	3	1	1	1
6, ...	July 21, 1889, ...	Moxham, ...	6	Bad. spring, ...	29	10	19	4	2
7, ...	July 6, 1889, ...	Roxbury, two miles from town, ...	4	Well, ...	46	21	25	10	4
8, ...	August 11, 1889, ...	Woodvale, ...	2	Hydrant and spring; first case worked at Moxham, ...	8	5	3	None.	None.
9, ... Diagnosis typho-malarial.	Kept no record of cases treated during June; all work gratis.	. . . .	. . . .	Surface spring, ...	40	8	30	2	1
10, ...	September 1, 1889, ...	Locust street, Johnstown, .	3	First case worked at Moxham, water there the cause, ...	17	6	10	1	None.
11, ...	July 15, 1889, ...	Moxham, ...	10	Spring near house, . . .	27	23	4	None.	None.
12, ...	July 16, 1889, ...	Seventh ward, Johnstown,	50	Hydrant, ...	81	66	15	None.	6
13, ... Red Cross Hospital.	July 29, 1889, ...	A large proportion of the cases were workmen in state force, ...	. . . .	. . . .	53	. . . . . .	. . . . . .	. . . . . .	5
14, ...	June 21, 1889, ...	Stony Creek township, . . .	6	Spring, ...	50	20	30	10	10
15, ...	July 1, 1889, ...	Grubbtown, worked at Moxham, ...	. . . .	Used water at Moxham,	24	14	10	4	3
16, ...	July 25, 1889, ...	Conemaugh borough, . . .	. . . .	Hydrant; had been nursing fever patient.	13	4	9	3	2
					461	215	190	45	40

(c.) TYPHOID FEVER AT LANCASTER.

MANOR, PA., *July 24, 1890.*

BENJAMIN LEE, M. D.,
Secretary of the State Board of Health, Philadelphia, Pa.:

DEAR DOCTOR: Your letter of the 23d, came to hand this morning. Father being postmaster here he referred it to me. In reply to your inquiry, would say that we have in all about twenty-five cases of fever at present. In my opinion the epidemic is due to the cleaning of privy vaults during the months of May and June, and dumping the contents in a small creek above town from which the odor at times was anything but pleasant. We have no sewage whatever and our vaults for excrement are anything but what they should be.

Our water cannot help but be very bad and with the ordinary test it seems to be very much contaminated with filth.

The Pennsylvania Railroad Company are also moving a large state dump from the Westmoreland Coal Company's works about one-third mile below town. This dump has quite a number of dead mules in it and the workmen tell me that by times the stench is very strong.

The first two cases were people employed in removing this dump, but I am inclined to think that the trouble is due to all three causes. Would like to hear from you again and will be very thankful for any information you can furnish me to prevent any further spread of this epidemic.

There have been but five deaths and two of these were due to complications existing previous to typhoid fever. Hoping to hear from you soon again,

I remain yours truly,
A. D. MILLER.

DEAR DR. LEE. The following are the results of the analysis of water sent by you this morning from Lancaster, Pa. The quantity of the sample, one pint, was too little to permit of the application of all the usual tests, but sufficient could be ascertained to show the polluted character of the water. All the figures are in grains to the United States gallon:

Chlorine,	2.90
Nitrogen as nitrites,	0.023
Nitrogen as nitrates,	0.60
Nitrogen as organic matter,	0.01

The total solids were approximately estimated on a small amount of the sample, and showed about forty grains to the gallon.

The above figures show a water decidedly polluted and unfit for drinking purposes. The figures for the nitrates especially indicates that active micro-organisms are present in abundance, or that the water has been recently polluted with foul water. The figures for the organic matter and nitrates are also high.

Yours,
HENRY LEFFMANN.

(d.) DIPHTHERIA AT MIDDLETOWN, DAUPHIN COUNTY.

Information having been received of the prevalence of diphtheria at Middletown, the secretary sent circulars to burgesses, school directors and all physicians, which were acknowledged by the burgesses as follows:

BURGESS' OFFICE,
MIDDLETOWN, PA., *October 1, 1890.*

DR. BENJAMIN LEE, *State Board of Health :*

DEAR SIR: Documents received. Preachers notified. Will distribute personally. Notices printed and will be put up to-day. Schools are closed. Disease is not as yet spreading much: several cases convalescent. Have been sick in bed for several days, but will try and do what is required.

Respectfully,
C. H. HUTCHINSON, *Burgess.*

(e.) DIPHTHERIA AT WATERVILLE, LYCOMING COUNTY.

[Letter of Medical Inspector Payne, with replies]

TOWANDA, PA., *October 1, 1890.*

DEAR SIR: I am informed that diphtheria is at present prevalent in your place, and am directed by the state board of health to make inquiries in reference to it. I would, therefore, be much obliged if you would either give me the information asked for below or hand this letter to some prominent physician of the place who will do so.

First. To what extent does the disease exist at present, and is it on the increase or decline? On decline; one case now.

Second. Are the cases generally of a malignant or mild character? Six of malignant character.

Third. If you can do so with some degree of accuracy, please state the number of cases which have already occurred, the number of deaths and the population of the town? Number 1, sixteen; number 2, six; number 3, ninety.

Fourth. In case of funerals, have they or not generally been public, or have any efforts been made to prevent or discourage the custom of public funerals for persons dying of that disease? Two of the deceased were taken into the church and had funeral services, the balance were taken and buried and services held afterwards; it does not appear that the disease was spread by the funerals as there was only one person took it that had attended any of the funerals, and she did not take it until nineteen days after.

Fifth. What measures, if any, have been adopted to prevent the spread of the disease? None of a public nature, every one used disinfectants and kept away from contact with it as much as possible.

Sixth. Is the disease confined to any particular part of the town, and if so does it present any particular characteristics of soil, drainage or cleanliness? No.

Seventh. Can you give any probable cause of the origin or continuance? We were badly flooded and a great amount of sediment left around us and wells filled up by the June flood, 1889.

I am, very respectfully,
E. D. PAYNE, M. D.,
Inspector for Lycoming District.

The disease has acted strangely as to being contagious, some families have had one and sometimes two children out of a family of five or six children down with the disease, and while the well children were not allowed in the same room with the sick ones, yet the parents and nurses would come right out of the room where a child had it in its most malignant form and mingle and be with the other children and they would not take it, and one woman in particular would go and stay all night and help nurse the patients and then go home to a large family of children; she would change her dress and her family escaped. Then there were children that took it when neither they nor their parents had been near the disease. It seemed to be in the country, and those took it whose system was right for taking it whether they had been particularly exposed to it or not.

4—SPECIAL SOURCES OF DISEASE.

(a.) TIN-CANNED FOODS.

By Dr. BENJAMIN LEE, *Secretary*.

One of your subscribers makes an inquiry as to the healthfulness of "tin-canned goods." He also adds the statement that articles have appeared in print asserting "that the solder in its chemical action was particularly injurious to the kidneys."

Premising that preserved articles of food, meats, vegetables or fruit, can never afford quite the wholesome nourishment that the fresh articles supply, and that, therefore, they should only be used as a substitute for the latter when they cannot be obtained, and not as a mere matter of economy (and this is especially true as regards fish and meats), I would say, in reply,

First. That cases of poisoning by food preserved by hermetically sealing in tin cans are usually acute, taking the form of severe indigestion and cholera morbus. My attention has never been called to chronic poisoning arising from this cause, and I doubt whether it has been observed.

Second. The danger from the solder would be from the lead which it contains. This could not be injurious to the system usless it were dissolved by an acid. No food which did not naturally contain an acid or had not undergone acid fermentation, therefore, could be contaminated by it.

Third. With the improved method of manufacturing tin cans at the present day, there is very rarely any opportunity for the food to come in contact with the solder, and it probably rarely does so.

Fourth. While it is true that in chronic lead poisoning, albumen is found in the urine, thus indicating that the kidneys are affected, there are other symptoms which would be present, prominent among which is "wrist-drop," or paralysis of the muscles which support the hand when the arm is stretched out.

Fifth. Physicians are rather inclined to attribute the occasional cases of poisoning which fall under their notice as the result of eating articles thus preserved, to the fact that decomposition had begun before the articles were sealed up. The decomposition of meats, cheese and fish results in the development of powerful poisons known as "ptomaïnes," which produce the same train of symptoms as those usually met with in these cases.

Sixth. If such decomposition has taken place in any given case, or if the sealing has not been perfect, leading to putrefactive changes, there will usually be a development of gas in the can. The result of this will be that the top of the can instead of being concave (slightly depressed) will be convex (slightly bulged out or rounded). The can should, therefore, always be examined in this respect, and if the top bulges it should not be used.

Seventh. Any article which has been cooked in a copper vessel may contain a poisonous salt of copper. This is true, of course, of old-fashioned preserves and pickles as well as of canned goods.

Eighth. Canned goods certainly deteriorate by age, losing their nutrient properties, if not becoming actually deleterious or poisonous. It is important, therefore, to obtain them from reliable dealers and as fresh as possible.

Ninth. Every state should pass a law requiring the date of the sealing of the cans in which such food is preserved. Indeed, it is a question whether, inasmuch as these goods are shipped all over the United States, congress would not have a right to legislate upon the subject, as a matter affecting interstate commerce.

Tenth. In conclusion. The preservation of food by hermetically sealing is a most important means of varying the dietary and of providing for cases of emergency, such as long voyages, etc.

Such food, if not kept an inordinate length of time, is palatable and nutritious. Cases of poisoning from its use are very rare in comparison with the immense quantities consumed. Such poisoning is usually acute, not chronic, and there is no reason to suppose that the kidneys are especially affected by it. A can with a bulged end should always be promptly rejected.

(b.) TEST FOR TYPHOID.

WILMINGTON, N. C., *December 15, 1889.*

DR. BENJAMIN LEE:

MY DEAR DOCTOR: I did not intend to allow your letter of inquiry about Ehrlich's test for typhoid to go unanswered so long. Since I saw you I have had other confirmations of its reliability. You will find the whole matter in the Therapeutic Gazette for 1889, month I do not remember and I am not at this writing where I can put my hand on it.

The test is prepared in two solutions: No. 1 consists of sulphanilic acid, say thirty grains to one ounce of water, acidulated with twenty-eight drops of muriatic acid. This ought to make a saturated solution otherwise more sulphanilic acid should be added. No. 2 consists of a solution, one grain sodic nitrite to 4 ounces of water. To apply the test take of suspected urine, say two drachms to which add an equal volume of No. 1, to this add ten or fifteen drops of No. 2, and then alkalinize with strong ammonia, when the reaction will immediately appear. The reaction is crimson with a frothy surface, the color fading by standing a few hours. To make sure of your color, test normal urine side by side with known typhoid urine and fix the comparison in your mind. To get reaction, urine should be taken after the fourth day of fever and by the close of the second week.

Solution No. 2 will not keep, so it must be made fresh day by day. I have accumulated evidence of the accuracy of the test and feel satisfied that we have in it a most valuable diagnostic test.

I must send you a copy of our Journal on account of an article on water analysis.

Yours very truly,
THOMAS F. WOOD.

(c.) YELLOW FEVER AT WOMELSDORF.

The daily papers of Berks county having announced the presence of a case of yellow fever at Womelsdorf, Medical Inspector W. M. Weidman, M. D., reported this to Dr. Benjamin Lee, who ordered an investigation. Dr. Weidman at once communicated with Dr. Frank Sallade who was in charge of the patient, who replied as follows:

John Leaman, aged nine years, was taken sick March 18, symptoms, nausea and occasional vomiting, but kept his feet and went away with his mother to Myerstown. Mrs. Leaman did not know of the boy's indisposition until sometime after their arrival, when vomiting again set in and was ascribed to some candy the boy had eaten. He was brought home that evening and in the morning I was called to attend the case. Found him with a high temperature, 106, and a pulse 108, somewhat restless, tongue narrow and pointed with a white fur, afterwards becoming a yellowish white, then brown and dry. Bowels had been moved the first day but not afterwards. On the second day a purgative was administered but failed to act, and we supposed that the stomach had rejected it, and on the third day injections were resorted to but were not retained. The vomiting of the first day consisted of food and soon became bilious in character. On the second day it became decidedly bilious but of an ochreish yellow, and finally an orange yellow tinge. When the second stage was arrived at the matter ejected from the stomach was black. The vomit continued from noon of the third day until death took place. There was no green matter brought up. There was great thirst and he drank freely of water but did not retain it long. The skin at first was hot and dry, but during the last hours was cool and the extremities were cold several hours before death. There was no yellow discoloration of the skin during life. The eyes were sunken and staring, the conjunctiva somewhat injected. The eyes were rolling almost continually, the face was pinched and the countenance wore an expression of anxiety and fear.

The mind was busy from the onset and slightly delirious at times, but on the second day there was marked delirium in the morning with periods of consciousness and semi-consciousness lasting but a short time when delirium again held sway. Seemed conscious immediately before death.

On the second day the patient complained of some headache which became more marked later on, although it did not seem to be unusually severe. There was slight soreness over the epigastrium on the first day, became more marked on the second day and on the third the whole abdomen was painful, the pain being most marked over the region of the stomach. The patient shrank from any attempt at pressure over any part of the abdomen. The abdomen was somewhat swollen, but not hard or tense and but slightly tympanitic. The urine was not tested for albumen because there was no suspicion of yellow fever until the black vomit came on, and from that time on there was none passed. During the last hours the temperature was normal, and the pulse, two hours before death, had become imperceptible at the right wrist and perceptible at intervals at the left. After this the patient rallied somewhat and the pulse then was slow and compressible, but soon became slower and more faint. Convulsions set in and death took place fifteen minutes afterwards. Rigidity set in immediately after death, and some hours afterwards marked discoloration set in. The most dependent portions of the body on the second day after death were of a livid mottled and marbled appearance, and had a bruised and ecchymotic appearance no doubt due to an hypostatic congestion. This was very marked and different from anything I had ever seen before.

(d.) PUBLIC FUNERAL AT CATASAUQUA.

ARDMORE, PA., *May 17, 1890.*

DEAR DOCTOR: The following facts have just been made known to me: On Thursday last (15th) there was a public funeral held at Catasauqua, in the Evangelical church. A child seven years old had died of malignant scarlet fever on the preceding Sunday (or Saturday), the funeral was largely attended, and the casket was opened both at the church and cemetery.

A Rev. Bonar or Bonner preached the sermon. His residence is supposed to be Allentown. These facts were communicated to me by a lady, who attended the funeral, left there on Friday, and called me in yesterday (Friday), to see her child, here at Ardmore. It has a mixed eruption, measels predominating. I elicited the above information through questioning her. She also states that there is a violent epidemic of scarlet fever at Catasauqua—many cases—also a number of deaths. Some points brought out at the sanitary convention would do those people good.

Yours,
H. A. ARNOLD.

DR. BENJAMIN LEE, *1532 Pine street, Philadelphia.*

(e.) REPORTED CASE OF LEPROSY AT MILITARY ACADEMY, CHESTER, DELAWARE COUNTY.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *July 29, 1890.*

To the Principal of Pennsylvania Military Academy, Chester, Pa.:

DEAR SIR: I have learned with some anxiety that a young man, recently a pupil in your excellent school, is said to have developed symptoms of leprosy. Allow me to suggest the adoption of the following precautions for the protection of yourself and your students:

First. If the student in question occupied a small room as a dormitory either alone or with one or two others, I would discontinue the use of that room as a dormitory, scrape the plaster off the walls after having them well washed with a disinfecting solution (say standard solution No. 4, as recommended in the accompanying circular), and wash the floors and all the wood work with the same, ventilate for two weeks, and then replaster and paint the wood work. If, however, he slept in a large airy dormitory, only the portion of it which was near his bed would need the scraping, but the whole room should have thorough ventilation and disinfection. It would be well also in doing the regular house cleaning all over the institution in halls and class-rooms which he frequented, to put a disinfectant in the water, and not to employ dry sweeping until that has been done. His bedding and bed clothing should be burned. Having taken these precautions, if questions are asked by parents you will be able to say that nothing has been neglected which could contribute to the complete cleansing of the house.

I have the honor to be,
Dear sir,
Yours very respectfully,
BENJ. LEE.

(f.) FOUL WATER IN THE ALLEGHENY.

CITY OF ALLEGHENY, PA., *August 7, 1890.*

BENJ. LEE, M. D., *Secretary State Board of Health, 1532 Pine street, Philadelphia:*

DEAR SIR: The enclosed newspaper clipping is respectfully referred to you by the board of health of this city with the request that you cause the statements therein made to be investigated.

If found correct this board requests that you inform it what action it will be necessary for it to take in order to remedy the matter.

Yours respectfully,
ROBERT DILWORTH,
Clerk of Committees.

DEATH IN THE DRINK—A STARTLING STATEMENT ABOUT THE FOUL WATER IN THE ALLEGHENY.

To the Editor of the Post:

Permit me, through the columns of your paper, and in behalf of the citizens of Pittsburgh and Allegheny, to say that I think it would be in the interest of suffering humanity, and no doubt save the lives of many of your good citizens, if the physicians having control or the authority to look after the health of your city would take the time to come to Saltsburg, Pa. In five minutes walk I can show them, in Loyalhannah creek, what will astonish them and make them wonder that they are living when they see the poisoned water that is flowing out of the creek into the Kiskiminetas river at Saltsburg, and thence down the Kiskiminetas river into the Allegheny river for you people to drink.

It is an outrage on humanity to allow this stream to be polluted and become so impure. The fish are all dying in it, raising a sickening stench. Hogs that are fed on slops mixed with the water out of the creek are taken sick and some are dying. The same is true of those fed on feed mixed with this water. The water in said creek is as blue as indigo, and is poison to the animal that drinks it. No turtle or fish can live in it; all have to go. The good citizens of Saltsburg do not use it, as they have other sources from which to obtain pure water; but as a regular practising physician, I say it is high time for the health authorities of Pittsburgh to look after this evil and stop it. It is a certain corporation or party that is putting this poison in the water.

THOS. CARSON.

SALTSBURG, *August 1, 1890.*

(g.) ANALYSIS OF WATER FROM STATE COLLEGE.

ALTOONA, PA., *August 9, 1890.*

DR. BENJAMIN LEE, *Secretary State Board of Health, 1532 Pine street, Philadelphia:*

DEAR SIR: Referring to the question of the water from the well which supplies the college and the principal portion of the town at State College.

We sent a box and bottle for water sample to Professor H. P. Armsby, and received it filled in due time. In our conversation Professor Armsby stated he would fill it at the well. We have examined the sample and find as follows:

Nitrogen as nitrates,	3.60 parts per million.
Nitrogen as nitrites,	None.
Free ammonia,	0.003 parts per million.
Albuminoid ammonia,	0.01 parts per million.
Chlorine,	Less than one-quarter grain per gallon.

As you will note by these figures, the sources of this water are evidently being contaminated by some organic matter, but that thus far the power of the soil to decompose the organic matter is sufficient, so that practically nothing but nitrates exist in the water. We do not feel that a chemical analysis can say positively that a water is healthy. All we feel willing to conclude from the above figures is that the sources of this water are certainly being contaminated, and that the soil is thus far apparently decomposing the filth into nitrates. How long this will continue, it is of course impossible for us to say.

Very truly yours,
CHAS. B. DUDLEY,
Medical Inspector, Central District.

(h.) PAPER ON DISEASES OF THE EYE.

The State Board of Health:

GENTLEMEN: We, the members of the "Sydenham Medical Coterie," of Philadelphia, desire to call the attention of your board to the following facts:

First. That there is in the State of Pennsylvania, as in the United States, an apparently rapid increase in the number of blind.

Second. That a large percentage of the blindness is due to the purulent ophthalmia of infants.

Third. That by the use of known methods this could be materially lessened.

Fourth. That, notwithstanding that, no systematic effort is made to do so.

When we compare the report of the United States census of 1870, with that of 1880, we find that the increase of population for Pennsylvania for that period was 21.6 per cent., while the apparent increase in blindness for the same period was 119.8 per cent. Showing that blindess increased over five times more rapidly than the population. In New York State the figures are even more startling.

In the second place we wish to show that the most important factor in the production of blindness is the purulent ophthalmia of infants, or ophthalmia neonatorum. Fuchs found that among 3,204 cases of blindness collected from asylums in different parts of Europe, 23.5 per cent. were due to ophthalmia neonatorum. In the New York institution for the blind in Batavia, 23.4 per cent. of the inmates are there as the result of the same disease.

In the Philadelphia institution, Dr. Harlan found over twenty per cent. had been admitted for this cause.

Horner has shown that among 100 blind asylums in different countries the variation was from twenty to seventy-nine per cent.—average thirty-three per cent.

Haussmann gives the number in the asylum in Copenhagen, made blind by this disease, eight per cent., in Berlin, twenty per cent., in Vienna, thirty per cent., in Paris, forty-five per cent.

The importance of preventing this disease will be fully appreciated from the statistics already given.

We now desire to call your attention to the fact that a very safe, simple and reliable method is now known by which this disease can be almost entirely prevented, if thoroughly employed. We refer to the so-called Credé method, which consists in a thorough cleansing of the eyes, externally, of the infant immediately after birth, and then instilling a drop of a two per cent. solution of silver nitrate.

In order to show the advantage of this treatment, Dr. Lucien Howe, of Buffalo, has collected two lists of cases, the first showing the results given by different obstetricians who used no treatment for the eyes of 8,798 children born under their care. Among these there were 8.66 per cent. who had ophthalmia in a greater or less degree. The second list of 8,574 shows the results of the Credé treatment. In these cases there were only 0.65 per cent. In the Lying-in Hospital of Liepsic, where Credé instituted his own method, the per cent. fell from 7.5 to 0.5 per cent. The advantages of Credé's method have been recognized by its official recommendation in Austria, Germany, Switzerland and France.

In view of these facts we think it proper to submit the following, quoted from Dr. Howe's paper, as the course which should be pursued in combating this disease, and would ask for the earnest support of your honorable board in enlisting the attention and co-operation of the medical profession of the state.

First. To call the attention of the profession in general to the apparently rapid increase of blindness in this state and the United States. To the importance of the ophthalmia of children, and the efficacy of proper means of preventing it.

Second. To request the examiners of nurses and midwives to require of the candidates some knowledge of the dangers of the ophthalmia of infants, and an acquaintance of the methods now in use.

Third. To formulate and recommend the passage of a law by which all midwives in this state be obliged to report the existence of any case of ophthalmia of infants within twenty-four hours after its occurrence, to the family physician or to some legal qualified practitioner.

Very respectfully submitted.

Dr. H. Y. EVANS,
Dr. W. M. WELCH,
and others.

(i.) HOG CHOLERA.

A telegram having been received saying that dealers were shipping hogs in a diseased condition to Baltimore, Md., and East Liberty, Pittsburgh, Pa., the report was transmitted to Secretary Edge, of the board of agriculture, who at once notified Veterinary Surgeon ——————— to act with Medical Inspector C. L. Gummert, M. D. The diseased hogs were killed and the place was quarantined and thoroughly disinfected.

(k.) DIAGNOSIS OF DISEASE.

ALTOONA, PA., *October 20, 1890.*

DR. BENJAMIN LEE, *Secretary State Board of Health, 1532 Pine street, Philadelphia, Pa.:*

DEAR SIR: We find a little difficulty here in connection with the local board of health in the matter of contagious or infectious diseases. We require reports from our local physicians of all diseases which are contagious or infectious which come under their observation, said reports to be made within twenty-four hours after the diagnosis is satisfactorily determined. In making out the list of diseases which should be reported we follow the instructions of the state board of health, a copy of the blank being sent herewith for your observation. The difficulty which we experience is this: Some of our local physicians diagnose a certain disease as membraneous croup and others call the self-same thing diphtheria. We had a case recently where a child was diagnosed by a physician as having diphtheria. The disease yielded to treatment, and the child was getting along fairly well, so much so that the visits of the physician were discontinued. Subsequently another physician was called in who diagnosed the same disease as membraneous croup, and in a short time the child died. A public funeral resulted and some ten or fifteen cases of throat trouble have subsequently occurred in that locality, with one death. All these cases are believed to be directly traceable to the first one mentioned above.

The object of this letter is to ask the instructions of the state board of health in regard to including both ordinary and membraneous croup in our list of contagious and infectious diseases. You will readily understand the difficulty, and we will be very glad of any instruction which you may feel willing to send us.

Very truly yours,
CHAS. B. DUDLEY,
Medical Inspector.

(1.) WATER SUPPLY OF NORRISTOWN

I.

To the Board of Health of Norristown:

GENTLEMEN: In accordance with the request of Dr. J. K. Weaver, I have made investigations for the purpose of ascertaining the causes of the unusual prevalence of dysentery and inflammation of the bowels in Norristown during the past two months. Many of the cases occurred in localities where ordinary well water was used for drinking and household purposes, and measures were taken to ascertain what the qualities of these waters were and what diseases they were likely to engender and promote.

Chemical and other examinations were made of the water of the wells, and also of that in the river, as well as that of the river supply furnished by the water company. The results obtained showed that of all the wells examined only one was fit for drinking purposes. That one was from the pump-well on Airy street near the courthouse. This well had received some amount of surface wash of harmless nature, but the access even of this should be prevented. All of the other wells contained cesspool drainages, carrying either dysenteric or typhoid ejecta, or both. It is recommended that these contaminated wells should be filled up at once.

On the west side of the river, opposite to the suction pipe of the water works, the water is in an exceedingly impure condition and unfit for household use. In addition to an enormous number of diatoms, it carries cesspool drainage containing, among other organisms, the characteristic dejections of dysentery and typhoid fever.

Examinations of the surroundings revealed the fact that polluting drainages were running into the river at and above the location of the inlet-pipes to the water works. A portion of the harmful matter was derived from a heap of manure, and another portion was from the foul contents of a quarry about half a mile up the stream. The drainage from these sources was readily traced, and the location of the maximum impurity was near the entrance to the inlet-pipe to the water works. The remedy, which should be the removal of the source of pollution, can be readily and speedily applied, and the attention of the secretary of the state board of health has been called to the matter.

The water supplied from the reservoir upon June 30 was, for some unexplained reason, in much worse condition than that of the water in the river, and it would be good policy to replace the water in the reservoirs, as soon as the greater sources of pollution in the river are removed, by completely emptying and refilling them with water of better quality.

Samples taken from near locations in the river, but out of the line of the current which carries the greater part of the drainages to which reference has been made, showed water of a fair quality, which could be used for household purposes.

The quality of the water in the river is materially affected even in the absence of sporadic additions of unusual pollutions, by the conditions of flow in the river, especially as to whether the water is or is not flowing over the dams.

So far as relates to the sickness which is evidently propagated by the use of water from wells, the remedy lies in the careful examination of all wells and the rigid prevention of the use of those which give evidence of cesspool contamination, which is best effected by promptly filling them up.

Noticeable nuisances, prejudicial to health, are found in the use of surface gutters for all sorts of drainages, and also in the use of Stony creek as an open sewer for cesspool and household wastes. The construction of sewers to collect and carry all waste liquid material and convey it to points below the river front, would relieve the soil from an immense amount of soakage of liquid matter from the cesspools, which offensive matter is gradually permeating the ground beneath the dwellings, and is not only affecting injuriously the quality of the water in the wells, but to a greater or less degree polluting the air of the cellars, and even of the dwelling part of the habitations, by gases and effluvia emanating from decaying animal and vegetable matter.

Appended is a condensed table of the results of analysis of water from several of the wells and also of water from the river taken from the locations marked on the appended sketch of the river and banks.

Quarry No. 2, especially referred to, has several times in years past become a nuisance, but it was watched and disinfected from time to time when it became a source of danger. The material which comes from it is evidently largely decaying matter.

A great improvement in the river supply of water can doubtless be made by changing the intake to a location near the middle of the river and above the inflow of the surface drainages of Norristown. In this way a supply of fairly good water can be had, but to maintain which it will be necessary to exercise a strict police surveillance upon the banks for several miles above the borough.

The time cannot be far distant when the true policy will be to seek some new source of supply either from springs, creeks, wells or surface collection, and the work of investigation in this direction should now be in hand.

Respectfully,
CHARLES M. CRESSON, M. D.

July 28, 1890.

RESULTS OF THE EXAMINATION OF WATER SENT BY THE BOARD OF HEALTH OF NORRISTOWN, PA., ON JUNE 30TH AND JULY 1ST, 1891.

Chemical Examination.

No.	From.	PARTS IN THE 1,000,000.			
		Free ammon.	Album. ammon.	Chlorine.	Nitrogen from nitrates.
7037,	Hydrant, De Kalb street, Water-works reservoir,	0.110	0.400	4.250	1.714
7038,	Well (chain and bucket), No. 353 East Airy street,	0.165	0.274	17.140	41.140
7039,	Pump-well, Airy street, near the court house,	0.055	0.055	27.630	4.771
7040,	Pump-well, Airy street four doors above Arch street,	0.055	0.550	33.750	1.714
7041,	Pump-well, Airy street, second door above Arch street,	0.274	0.329	44.190	2.914

Microscopical Examination Showed.

7037. Ciliata and micrococci in great variety and numbers; epithelium and organized membrane; diatoms; and the bacillus of typhoid fever. This water is polluted and *unfit for drinking purposes.*

7038. Ciliata and micrococci, animal membrane, and typhoid bacillus. Greatly polluted with cess-pool drainage and *unfit for household use.*

7039. A few vegetable organisms, bacilli and ciliata. *Can be used as a drinking water.*

7040. Ciliata and micrococci in great numbers; no bacilli, but is polluted and *unfit for household use.*

7041. Ciliata, membrane, typhoid bacillus. Greatly polluted with cess-pool drainage and *unfit for household use.*

II.

To the Board of Health of Norristown, Pa.:

The results of the analysis of the well waters last sent for examination are as follows:

No.	From.	Parts in the 1,000,000.			
		Free ammon.	Album. ammon.	Nitrogen from nitrates.	Chlorine.
7108,	Pump-well 233 East Chestnut street, . . . The water of this well is greatly polluted with cess-pool material calculated to produce sickness. It contains great numbers of ciliata and membranous tissues. Bacteria were not found.	0.055	0.110	13.70	38.23
7109,	Pump-well Chestnut below Arch street, . . The water of this well is greatly polluted and is exceedingly unwholesome. It carries membranous matter, ciliata and micrococci in great numbers, and the dejecta of Dysentery.	2.740	0.165	. . . .	53.10
7111,	Stone well in Main near Franklin street, . . The water of this well is in bad condition and is unfit for household purposes. Although no disease germs were found the evidences of cess-pool pollution were very marked.	0.137	0.165	7.537	26.18
7112,	Deep well, Main and Franklin streets, . . . The water of this well is badly polluted and is unfit for household use.	0.301	0.329	6.850	21.29
7190,	Spring, Francis street, ... The water from this spring gives no evidence of serious contamination. It contains some soluble animal matter and a few diatoms.	0.055	0.083	. . . .	5.668
7191,	Well, Lafayette and Ford streets, ... The water of this well is contaminated with household drainage. In its present condition it cannot be classed with unwholesome drinking water but a small addition of soluble animal matter or of cess-pool matter would render it unfit for household use. Dangerous.	0.055	0.055	. . . .	31.88
7192,	Well at shirt factory on Corson street, . . The water of this well is very badly polluted by cess-pool drainage and is unfit for household use. It contains animal membrane, and great numbers of ciliata and micrococci. It is the worst polluted well of any yet examined.	1.650	1.370	. . . .	40.741

Several analyses of the water supplied by the water company (the samples being drawn from hydrants), on July 1st, August 9th and August 19th, show that the quality of the water has been gradually improving since the work of the removal of the most serious causes of pollution from the river has been in progress, and, when judged from the results of chemical examination, it has passed from a foul condition unfit for household use to one of a fair quality.

Microscopical examination, however, shows that it still carries disease germs and diatoms in such numbers as should condemn it for drinking purposes.

It is very evident that some special source or sources for this kind of pollution exists, and special investigation should be made of all of the possible sources of influx of drainages, to determine which of them should be excluded. This can only be done by examination of samples of water, to be taken from all of the creeks and sewers and drains which flow into the dam from which the water supply is derived.

WATER FROM THE RESERVOIR OF THE WATER COMPANY.

Samples drawn from Hydrants.

	PARTS IN 1,000,000.			
	Free ammon.	Album. ammon.	Nitrogen from nitrates.	Chlorine.
No. 7037, July 1,	0.110	0.411	1.714	5.250
" 7127, August 4,	0.055	0.247	0.685	3.830
" 7146, August 9,	0.055	0.247	. . . . .	3.530
" 7193, August 19,	0.027	0.137	. . . . . .	2.823

These waters were badly polluted by cess-pool and refuse drainages, and, with the exception of the sample taken on August 19th, were rendered unfit for household use by the amount of soluble organic matter which they carried.

A common objection, however, applies to all of them, to wit: The presence of great numbers of irritating diatoms and of the bacilli of enteric diseases.

The evident remedy is to empty and clean the reservoirs. In this way these most objectionable matters can be got rid of, and if the water in the river can be kept in an unpolluted condition a water supply of fair quality can be secured and maintained as long as the conditions named are maintained.

CHARLES M. CRESSON, M. D.

August 25, 1890.

(m.) PROPOSED MILK ORDINANCE IN PHILADELPHIA.

MAYOR'S OFFICE,
PHILADELPHIA, *May 2, 1889.*

To Select and Common Councils of the City of Philadelphia:

GENTLEMEN: I have the honor to herewith transmit for your consideration a communication, which has my approval, from William S. Stokely, director of the department of public safety, forwarding a communication from the board of health, together with a copy of proposed ordinance to prohibit the sale of adulterated or impure milk in the city of Philadelphia.

I am, respectfully,
EDWIN H. FITLER,
Mayor.

DEPARTMENT OF PUBLIC SAFETY,
PHILADELPHIA, *May 2, 1889.*

Hon. EDWIN H. FITLER, *Mayor of the City of Philadelphia:*

DEAR SIR: I herewith enclose a communication from the board of health with "An ordinance to prohibit the sale of adulterated or impure milk in the city of Philadelphia," and request the same to be transmitted to councils.

Yours respectfully,
W. S. STOKLEY,
Director.

HEALTH OFFICE,
PHILADELPHIA, *April 16, 1889.*

Hon. WILLIAM S STOKELY, *Director of the Department of Public Safety:*

DEAR SIR: I am directed by the board of health to transmit to you the following copy of resolution passed this date, and accompanying ordinance, and request its transmission to councils.

Respectfully yours,
WM. P. TROTH,
Chief Clerk.

WHEREAS, By an act of assembly, April 20, 1869, section 1, P. L. 81, P. D. 1173, "The councils of cities and boroughs in this commonwealth be and they are hereby authorized and empowered to provide for the inspection of milk, under such rules and regulations as will protect the people from adulterations and dilution of the same;" therefore,

Resolved, That the select and common councils be and they are hereby respectfully requested, as authorized and empowered by the aforesaid act, to pass the following ordinance:

AN ORDINANCE

To prohibit the sale of adulterated or impure milk in the city of Philadelphia.

SECTION 1. *The Select and Common Councils of the City of Philadelphia do ordain,* That whoever, by himself, or by his servant or agent, or as the servant or agent of any person, sells, exchanges or delivers, or has in his custody or possession, with intent to sell or exchange, or expose or offers for sale as pure milk, any milk from which the cream or any part thereof has been removed, or which has been watered, adulterated, or changed in any respect by the addition of water or other substance, shall be liable to the penalties hereinafter provided in this ordinance.

SECTION 2. No dealer in milk, and no servant or agent of such a dealer shall sell, exchange, or deliver, or have in his custody or possession with intent to sell, exchange, or deliver, milk from which the cream or any part thereof has been removed, unless, in a conspicuous place above the center, upon the outside of every vessel, can, or package from, or in which such milk is sold, the words "Skimmed Milk" are distinctly marked in uncondensed Gothic letters not less than two inches in length. Whoever violates the provisions of this section shall be liable to the penalties hereinafter provided in this ordinance.

SECTION 3. No person shall sell, exchange, or deliver, or have in his custody or possession with intent to sell, exchange or deliver, skimmed milk containing less than nine per cent. of the milk solids exclusive of butter fat. Whoever violates the provisions of this section shall be liable to the penalties hereinafter provided in this ordinance.

SECTION 4. That every person who shall sell or who shall offer for sale, or who shall transport or carry for the purposes of sale, or who shall have in possession with intent to sell or offer for sale, any impure, adulterated, or unwholesome milk, and every person who shall adulterate milk, or who shall keep cows for the production of milk in a crowded or unhealthy condition, or feed the same on food that produces impure, diseased, or unwholesome milk, or shall feed cows on distillery waste, usually called "swill," or upon any substance in a state of putrefaction or rottenness, or upon any substance of an unwholesome nature, shall be liable to the penalties provided in this ordinance.

SECTION 5. That the addition of water or any other substance or thing is hereby declared an adulteration, and milk that is obtained from animals that are fed on distillery waste, usually called "swill," or upon any substance in a state of putrefaction or rottenness, or upon any substance of an unwholesome nature, or milk that has been exposed to or contaminated by the emanations, discharges, or exhalations from persons sick with any contagious disease by which the health or life of any person may be endangered, or milk from tubercular cows, is hereby declared to be impure and unwholesome.

SECTION 6. That in all prosecutions under this ordinance, if the milk shall be shown, upon analysis by the chemist to the board of health, or by any chemist or chemists appointed or designated by the director of the department of public safety, to contain more than eighty-eight per cent. of watery fluids, or to contain less than twelve per cent. of milk solids, or to contain less than nine per cent of milk solids exclusive of butter fat, such milk shall be deemed, for the purposes of this ordinance, to be adulterated.

SECTION 7. That any person who shall violate any of the provisions of this ordinance shall be liable to a penalty of $50 for the first offence, and $100 for a second offence or subsequent offence, to be sued for in the corporate name of the city of Philadelphia, and recovered in the same manner, and by the same proceedings and process as the law provides for the recovery of debts of the like amount, and all such penalties.

SECTION 8. That the director of the department of public safety shall appoint an inspector of milk, together with such assistants, analysts, clerks and collectors of samples as may be considered necessary to enforce the provisions of this ordinance by the board of health through the director of the department of public safety, at such compensation as may be approved by city councils; said inspector or assistants having reason to believe the provisions of this ordinance are being violated, shall have power to open any can, vessel, or package containing milk, whether sealed, locked, or otherwise, or whether in transit or otherwise; and if, upon inspection, he shall find such can, vessel, or package to contain any milk which has been adulterated, or from which the cream or any part thereof has been removed, or which is sold, offered, or exposed for sale, or held in possession with intent to sell or offer for sale, in violation of any section of this ordinance, said inspector is empowered and directed to take a sample of the same for analysis and put into a can, vessel, or package, to be sealed in the presence of one or more witnesses, and sent to the chemist of the board of health, or any chemist or chemists appointed or designated by the director of the department of public safety; and also to condemn the same and pour the contents of such can, vessel, or package upon the ground, or return the same to the consignor, and if, upon analysis, such milk shall prove to be adulterated, shall direct said suit to be brought against the persons or party so violating the law: *Provided, however*, That if, upon analysis, it is proved that the condemned milk is unadulterated, the city shall be liable for the value of the article destroyed.

SECTION 9. That the board of health shall cause the name and place of business of every person convicted of selling adulterated milk, or of having the same in his possession, to be published in two daily newspapers of the city.

SECTION 10. That the inspector shall record, in books kept for the purpose, the names and places of business of all persons engaged in the sale of milk within the city limits, and also of cases in which the law and ordinance pertaining to the adulteration of milk have been violated.

HEALTH OFFICE.

Extracts from Laws of other States, showing the Standards of Milk Solids adopted.

Extract from the law of Pennsylvania, which refers to all cities in the commonwealth but Philadelphia, 1885:

"SECTION 4. If the milk * * * is shown, upon analysis, to contain more than 87.50 per centum of watery fluid, and to contain less than 12.50 per centum of milk solids, and less fat than three per centum, and if the specific gravity at sixty degrees Fahrenheit is not between 1.029 to 1.033, it shall be deemed to be adulterated."

Extract from the law of New York, 1884:

"If, in all prosecutions under this act, * * * the milk be shown to contain more than eighty-eight per centum of water or fluids, or less than twelve per centum of milk solids which shall contain not less than three per centum of fat, it shall be declared adulterated."

Extract from the law of New Jersey, 1882:

"In all prosecutions under this act if the milk shall be shown upon analysis by a member of the public analysts of this state, or the chemist of the state experiment station, to contain more than eighty-eight per cent. of watery fluids, or to contain less than twelve per cent. of milk solids, such milk shall be deemed for the purposes of this act to be adulterated."

Extract from law of Massachusetts, 1886:

"In all prosecutions * * * if the milk be shown upon analysis to contain more than eighty-seven per cent. of watery fluid, or to contain less than thirteen per cent. of milk solids, or to contain less than 9.3 per cent. of milk solids, exclusive of fat, it shall be deemed for the purposes of this act to be not of good standard quality, except during the months of May and June, when milk containing less than twelve per cent. of milk solids shall be deemed to be not of good standard quality."

The standard adopted by the United States Treasury Department:

Whole (pure) milk, the minimum specific gravity, "actual density," shall be 1.030 at 60° Fahrenheit, and the milk shall contain not less than 13.0 parts in 100 of solids, as follows:

Fat,	3.5
Solids, not fat,	9.5
Water, not more than	87.0

The removal of cream, the addition of water, foreign fats or coloring matter, will be considered adulterations.

(n.) DISPOSAL OF GARBAGE, ETC.

[Extract from the report of the board of health of Philadelphia for the year 1889.]

"The present system of the collection and disposal of garbage has been tried for a long time and has proved a failure from a sanitary point of view. The garbage is removed by a number of small contractors in a very unsatisfactory manner. Many of these contractors dispose of it by feeding it to hogs, others mix it with other waste products for a manure, and at times it is buried or accumulated on the ground awaiting slow decomposition. The result is the creation of nuisances of various kinds which the board of health is continually called upon to have abated. Another result of this method, if the term may be used, is the collection of swine in the environs of the city, which, from the peculiarities of these animals and the character of the food upon which they are fed, the condition of the enclosures where they are kept becomes a nuisance of a most disgusting nature."

"The manner in which the night-soil is used as a fertilizer in the outskirts of the city is most objectionable, and the use of refuse for filling up sunken lots for building sites is to be condemned for the best of reasons. Dwellings built upon such a soil cannot be healthy, and yet depressions are scarcely leveled with this heterogeneous mass before the builder commences his work of erecting houses."

APPENDIX I.

CORRESPONDENCE.

1. To the Burgess and Council of Muncy.
2. To the Board of Trustees of the State Hospital for the Insane, Norristown.
3. From W. S. Kirkpatrick, Esq., Attorney General.
4. Forestry Laws.
    (a.) Pennsylvania Forestry Association.
    (b.) To Hon. L. F. Watson, Chairman etc., on Forestry Laws.
    (c.) From Hon. Jos. M. Cary.
5. Milk Inspection.
    (a.) From W. E. Allen, M. D., Health Officer, Scranton.
    (b.) From W. E. Allen, M. D. Health Officer, Scranton.
    (c.) To Dr. W. E. Allen, by B. Lee, Secretary, etc.
6. From Wm. H. Parrish, M. D., Secretary of Anatomical Board.
7. From D. F. Fortney, Esq., on Typhoid Fever at State College.
8. From S. H. Gray, Secretary Oil City Health Board, on Powers of Council.
    (b.) Reply of Benj. Lee, M. D., Secretary.
9. From L. H. Hunter, Tidioute, Closing Schools during an Epidemic.
    (b.) Reply of B. Lee, Secretary.
10. From J. Guy McCandless, M. D., Supposed Case of Leprosy.
11. Feeding Cows on Brewers' Grains, or Waste.
    (a.) From G. E. Brownback, Linfield.
    (b.) From W. G. Newton, M. D., Paterson.
    (c.) From Thos. J. Edge, Secretary State Board of Agriculture, Pa.
12. Disposal of Garbage.
13. Decision with regard to a city's right to drain into a private property.

1—TO THE BURGESS AND COUNCIL OF MUNCY.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE,
PHILADELPHIA, *November 21, 1889.*

To the Burgess and Council of Muncy:

GENTLEMEN: At the last regular meeting of the state board of health, a report was presented by Prof. G. G. Groff, M. D., a member of the board, of the survey made by him of the region from which it is proposed to draw a water supply for your borough. The board considers the facts regarded in this report to indicate that a supply drawn from such a source would be in danger of serious pollution, which would render it unsuitable for drinking and culinary purposes. It is much easier to start with the pure water supply in the outset, than it is to make alterations in the system after it has been completed.

The borough of Towanda is supplied from a region almost the counterpart of that proposed for Muncy, the water has proved so foul and offensive that the citizens are unwilling to introduce it into their homes. It has been a constant source of anxiety and litigation. After the expenditure of a large amount of money, and suffering extreme inconvenience, there is a probability that another source of supply will be sought.

The board, therefore, strongly urges your honorable body to hesitate before committing itself to the acceptance of the source of supply indicated.

Very respectfully,

BENJAMIN LEE,
Secretary and Executive Officer.

2—TO THE BOARD OF TRUSTEES OF THE STATE HOSPITAL FOR THE INSANE, NORRISTOWN.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE,
PHILADELPHIA, *November 25, 1889.*

To the Honorable the Board of Trustees of the State Hospital for the Insane at Norristown:

GENTLEMEN: The act establishing this board makes it the duty of the managers of all hospitals to furnish reports to the board at such times and of such facts as it may deem important. When an institution is situated in or near a large town, the interests of the public health will often be better subserved if such reports are made directly, at frequent intervals, to the local board of health of the town. The state board of health, therefore, directs that monthly reports of the deaths occurring in your hospital, and of the diseases from which such deaths occur, be forwarded to the secretary of the board of Norristown.

On the occasion of my last inspection of your admirable institution, I was impressed with the importance of procuring a purer source of water supply. There is, unquestionably, a certain amount of pollution of the

Schuylkill river at Norristown, and I need not say how important it is for the reputation of an asylum that its inmates should be provided with water as nearly pure as possible. I would suggest that if a water supply could be drawn from artesian wells it might prove a satisfactory solution of the difficulty.

I have the honor to be, gentlemen,
Yours, very respectfully,
BENJAMIN LEE,
Secretary.

3—FROM W. S. KIRKPATRICK, ESQ., ATTORNEY GENERAL.

OFFICE OF ATTORNEY GENERAL, PENNSYLVANIA,
HARRISBURG, PA., *March 27, 1890.*

BENJAMIN LEE, M. D., *Secretary State Board of Health, 1532 Pine street, Philadelphia, Pa.:*

DEAR SIR: In a recent communication you submit a printed circular letter, signed by yourself as secretary and executive officer of the board of health, and addressed to certain municipalities in this state, and request my views as to the position taken therein. This circular, after directing attention of the municipal authorities to the sources of the powers and duties of boroughs, recommends the formation of local boards of health, suggesting the plan set forth in the recent municipal act for the government of cities of the third class as a model or basis of organization of such boards.

I think there can be no doubt as to the power of such municipalities to establish by ordinance boards of health, but the powers of such boards would be very limited, and their duties would necessarily be of an advisory character. The service of its members would be purely voluntary and without compensation, but, even under such limitations, they, no doubt, would prove very useful. They could exercise supervision over the public health and sanitary condition of the municipality, and would be quite likely to make recommendations in the way of municipal action that would be desirable and exceedingly beneficial. I do not think that the state board of health can give any authority to the borough authorities to constitute such a board which they do not possess by virtue of the law under which the borough may be incorporated, or of the provisions of its special charter, if to such it owes its existence and constitution.

I am also quite clear that such board would have no power of its own to enforce any regulations which it might assume to make by any of the usual sanctions by which municipal legislation is rendered effective. The local legislature of such municipality is competent, under the usual grant of power, to make such regulations as may be necessary for the health and cleanliness of the borough, and to pass such ordinances as may be necessary to enfore them, and, of course, may prescribe appropriate penalties to secure their observance. I am strongly of the opinion, however, that the municipal authorities cannot delegate any of their powers in this behalf to any subordinate body created by themselves without express warrant therefor, in the character of such borough or in the law under which it may have been erected.

Respectfully yours,
W. S. KIRKPATRICK,
Attorney General.

4—FORESTRY LAWS.

(a.) PENNSYLVANIA FORESTRY ASSOCIATION.

PHILADELPHIA, *March 25, 1890.*

To the Members of the Association and to all friends of Forestry throughout the United States:

A sub-committee of the Public Lands Committee of the House of Representatives has been appointed to consider forestry legislation. This sub-committee is composed as follows:

Lewis F. Watson, chairman (lumberman), of Twenty-seventh district, Pennsylvania (Venango, Warren, McKean and Cameron counties), Republican.

Erastus D. Turner (lawyer), of Kansas, formerly of Lockport, Pennsylvania, Republican.

Joseph M. Carey (lawyer and stock raiser), of Wyoming (studied at University of Pennsylvania).

John Quinn, of New York, Democrat.

Several measures of relative degrees of merit will come before this committee, including Mr. Dunnell's bill, No. 7026, prepared by the American Forestry Association, and printed in full in *Forest Leaves* for March, 1890. This provides for the withdrawal of all government forest lands from sale and entry, and their temporary protection and management by a competent commission, who shall report a plan for permanent management at the next session.

Will you please aid the work of this and all other forestry associations by writing to the members of the sub-committee, and bringing all other influences to bear upon them, in favor of the Dunnell bill and any other *bona fide* measure for forest preservation and management, and in opposition to all schemes for selling the public forest lands or stripping them of timber without regard to what may become of them afterwards.

Yours respectfully,
J. RODMAN PAUL, *Chairman*,
(208 South Fifth st., Philadelphia,)
ELI KIRK PRICE,
HENRY BUDD,
CHARLES C. BINNEY,
W. WHARTON SMITH,
Committee on Law.

(b.) TO HON. L. F. WATSON, CHAIRMAN, ETC., ON FORESTRY LAWS.

EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *April 1, 1890.*

HON. LEWIS F. WATSON, *Chairman Sub-Committee of the Public Lands Committee of the House of Representatives on Forestry Legislation, Washington, D. C.:*

DEAR SIR: I have been informed that several important measures, looking towards the protection and management by properly constituted authorities of government forest lands, will come before your committee during the present session. Among these Mr. Dunnell's bill, No. 7026, prepared by the American Forestry Association, providing for the withdrawal of all such lands from sale and entry, and the establishment of a competent commission for their temporary care, charged with the duty of reporting a permanent plan at the next session, is probably that which promises the best results. All plans, however, which contain an honest promise of checking the plundering of public wooded domains and stripping the hillsides of timber, deserve respectful consideration. May I ask your attention to a copy of the Annals of Hygiene, which I take the liberty of forwarding to your address, which contains the papers read before the recent sanitary convention held at Wheeling, West Virginia, for the purpose of considering the subject of floods. One paper, especially, that of Dr. Ulrich, is worthy of your attentive perusal in this connection. I feel that I cannot too strongly urge upon your committee the necessity for interference in this matter on the part of the national government.

I am,
Dear sir,
Yours, very respectfully,
(Signed) BENJAMIN LEE,
Secretary.

(c.) FROM JOSEPH M. CAREY, ESQ.

WASHINGTON, D. C., *April 3, 1890.*

BENJAMIN LEE, M. D.,
State Board of Health, Philadelphia:

DEAR SIR: I have received your letter and have to say that I take a good deal of interest in anything that tends to protect the forests of this country. This is especially necessary in the Rocky Mountains, where the moisture precipitated is necessary for the reclamation and irrigation of the farming lands. The timber holds up and protects the snow that falls in the winter. The sentiment all through the west is now very strong toward having the strictest laws possible to protect the growing timber.

Very truly yours,
JOSEPH M. CAREY.

5—MILK INSPECTION.

(a.) FROM W. E. ALLEN, M. D., HEALTH OFFICER, SCRANTON.

Dr. BENJAMIN LEE,
Secretary State Board of Health:

DEAR SIR: Will you kindly inform me what you consider the best method of testing milk? As we have no inspector of food in this city, I am anxious to ascertain what, in your opinion, is the most practical and not too elaborate plan.

Very respectfully,
Yours,
W. E. ALLEN,
Health Officer.

(b.) FROM W. E. ALLEN, M. D.

DEPARTMENT BOARD OF HEALTH,
SCRANTON, PA., *June 4, 1890.*

Dr. BENJAMIN LEE,
Secretary State Board of Health:

DEAR SIR: A few months ago, in my report to the Scranton board of health, among other things, I strongly urged the necessity of an "inspector of food, meats, fish, milk, etc." Scranton now has a population of at least ninety thousand, no regular market and numberless irregular and irresponsible dealers in everything of the sort, and the demand for a proper officer for that duty seems to me to be great. At a subsequent meeting of the board, the committee, appointed to consider the matter, decided that the health officer be instructed to perform the duties of inspector. I would like to inquire if it is customary in cities of the third class in Pennsylvania to expect such services of the health officer. The salary is now eight hundred, and the duties already are by no means trifling, and come to add the daily inspection of food there would be time for nothing else. Of course, no reputable physician, having anything like a decent practice, could think of taking any such position, and I have thought it not improper to ask you if this is good form or customary.

Very respectfully yours,
W. E. ALLEN,
Health Officer.

(c.) TO W. E. ALLEN, M. D., BY B. LEE, M. D., SECRETARY.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *June 23, 1890.*

W. E. ALLEN, M. D.,
Health Officer, Scranton, Pa.:

DEAR SIR: Your two communications, in reference to milk inspection, have been held until I could give you some definite information in regard to the performance of the duties of milk inspector by a health officer. As a general statement I would say that the board of health can assign to the health officer any duties, which, in its judgment, are essential to protect the health of the community; but if it at any time assigns new duties, and especially if such new duties are of a nature to demand the expenditure of a considerable amount of time, it should at the same time increase his compensation correspondingly. In a large city such a union of two distinct offices would not for a moment be thought of, and I should imagine that, even in a city of the size of Scranton, the public interests would best be subserved by keeping them separate.

In reference to the best mode of conducting an inspection of milk, I would say the law (act of July 7, 1885, Compendium of Laws relating to Public Health, p. 81, secs. 225, 226, 227) establishes the specific gravity test as legal, and as the basis for prosecution. The best instrument for making this test is that known as Tagliabue's lactometer. This can be procured, with full instructions as to its mode of use, of any chemical apparatus house, such as Bullock & Crenshaw, French, Richards & Co., Queen & Co., of this city. Chief Milk Inspector Byrne, of this city, assures me that it will afford him pleasure to demonstrate to any one his method of proceedure, and I feel that such an ocular demonstration would be far more valuable than any description I could give.

6—FROM WM. H. PARISH, M. D., SECRETARY OF ANATOMICAL BOARD.

1435 SPRUCE STREET.

DR. BENJAMIN LEE,
Secretary State Board of Health:

DEAR SIR: John L. West, the steward of state hospital for insane, has informed me by letter that the board of health charges the management of that hospital fifty cents for each body turned over to the state anatomical board, and that he is directed to charge the same to the anatomical board. Will you kindly let me have a copy of the rule adopted by your board effecting, directly or indirectly, such a tax on bodies passing into the possession of the anatomical board, and kindly also state the authority under which you are acting. I desire such information that I may intelligently bring the matter before the executive committee of state anatomical board.

Very truly, etc.,
WM. H. PARISH,
Secretary State Anatomical Board.

1435 SPRUCE STREET, *July 1, 1890.*

DEAR DR. LEE: I thank you for your favor of June 23. The letter I received from a state hospital was in error as to the tax being imposed by the state board. It was only the local board, as has been the custom in different parts of the state for years.

Very truly, etc.,
WM. H. PARISH,
Secretary State Anatomical Board.

7—FROM D. F. FORTNEY, ESQ., ON TYPHOID FEVER AT STATE COLLEGE.

BELLEFONTE, PA., *August 16, 1890.*

BENJAMIN LEE, M. D.,

DEAR SIR: The enclosed clipping will, on reading, explain itself. It seems to me that the board of health should look into this matter. Here are five deaths caused by typhoid fever in two families in a short space of time. My information is that there is a good bit of fever in that community. The place is known as "The Loop," or Tusseyville (P. O.). Nearest railroad station, Centre Hall, along the Lewisburg and Spruce Creek railroad.

My opinion is that the fever has its beginning in the use of bad water. The people, I think, use well water, and we had so much rain during the spring that I believe the wells have become infected from barn yards and cesspools. It is simply an outrage to have people taken off that way.

Very respectfully,
D. F. FORTNEY.

CAUSED BY TYPHOID—FIVE PEOPLE, ALL CLOSELY RELATED, DIE WITHIN ONE MONTH—TRULY AN APPALLING AFFLICTION.

Two weeks ago the "Gazette" called attention to the extreme fatality which had prevailed in the family of C. H. and Hattie Evey, at State College, three members of the family having died in a very short period. The "Gazette" must now record an instance of yet larger fatality in a family relationship, all of the members of the afflicted family living near Tusseyville, Centre county.

First came the death of John H. Wagner. This occurred on Friday, the 18th. His age was 55 years 6 months and 12 days. He was buried on the 23d day of July.

The next death was that of his daughter, Lizzie Wagner, which occurred on 3d of August. She was 21 years 3 months and 20 days of age. The funeral occurred on Tuesday, the 5th inst.

The death of John K. Wagner, a son of Jacob and Catharine Wagner, and a nephew of John H. Wagner, occurred on Thursday, the 7th of August. His age was 16 years. The funeral occurred on Friday afternoon.

This family also was doomed to be doubly afflicted, for Susan B. Wagner, a sister of the above-named young man, died on the 13th inst., at 9 o'clock. Her age was 13 years. The burial was in the Zion churchyard.

The venerable father of Mrs. Wagner, Mr. Michael Pauley, was also stricken with the disease and died on Monday, his burial occurring on Wednesday. His death took place at the home of a granddaughter, Mrs. M. Rossman.

8—FROM S. H. GRAY, SECRETARY, OIL CITY HEALTH BOARD. ON POWERS OF COUNCIL.

BOARD OF HEALTH,
OIL CITY, Pa., *August 19, 1890.*

MR. BENJ. LEE, *Secretary State Board of Health, Philadelphia:*

DEAR SIR: Sometime ago a question came up before our board as to the advisability of closing a spring of water which existed on a side-hill in our city, the water from which spring was used by certain families. It being on the side-hill we argued that the surface drainage, etc., made the water of the spring unfit for use. Of course we were aware that we would have to have something definite upon which to base the action of closing the spring, and therefore, had a test of the water made by Mr. Hugo Blanck, Ph. D., professor of chemistry in Pittsburgh College of Pharmacy. We enclose copy of his report for your information. Would you consider it sufficient from a legal point of view, to justify our going upon the property and closing the spring? If you will kindly give us definite information upon this subject, with any suggestions in regard to the same that may occur to you, we will appreciate it very much.

There is also another subject which we wish to present to you. In this city there are numerous railroad crossings. Some have gates which are used in the daytime and until about nine o'clock at night. Other crossings have nothing but watchmen, and one has no watchman at all. We have been urging it upon the authorities to compel the railroad companies to place gates at these latter crossings in order to avoid accidents. There have been several mishaps under the present condition of things, but nothing serious has happened as yet. We wish you would advise us as to the scope of the action of the board in this matter; that is, how far we are entitled to proceed toward compelling the railroads to furnish the protection spoken of.

If you will advise us at your early convenience in regard to the above named subjects, we will appreciate the favor very much indeed.

Respectfully,
S. H. GRAY,
Secretary Board of Health.

PITTSBURGH, PA., *June 9, 1890.*

Board of Health, Oil City, Pa.:

GENTLEMEN: The water you ordered to be analyzed May 28, 1890, contains in 1,000 parts of the filtered water:

Total sol.,	0. 2833 parts.
Organic matter,	0. 173 "
Chlorine,	0. 049 "
Sulphuric acid,	0. 0214 "
Nitrous acid,	strong traces.

Nitric acid,	traces.	
Ammonia,	0.0001	parts.
Albuminoid ammonia,	0.007	"
Lime,	0.027	"
Magnesia,	0.0044	"
Iron,	0.002	"

Hardness, calculated on 100,000 parts—Hardness, temporary, 3.2; hardness, permanent, 2.9.

The water contained a large quantity of suspended matter of doubtful character, making it unfit for drinking purposes. The analysis is not so unfavorable, but by no means a recommendation for the water. The total solids are in the limits of good drinking water; so are the sulphuric acid, lime and magnesia; the hardness is not too high. But the presence of ammonia, nitrous acid and the amount of chlorine (0.0355 being the limit), shows that the organic matter (partly) derives from dangerous sources, and here the analysis points to the same end as the suspended matter—the water is unfit for drinking purposes.

Very respectfully,
HUGO BLANCK, Ph. D.,
Professor of Chemistry, Pittsburgh College of Pharmacy.

(b.) REPLY OF BENJ. LEE, M. D., SECRETARY.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *August 25, 1890.*

MR. S. H. GRAY, *Secretary Board of Health, Oil City, Pa.:*

DEAR SIR: I am duly in receipt of your communication of the 19th inst., having reference to the powers of your board in closing a certain spring of water, and the erection of gates at the several railroad crossings in your city.

With regard to the spring of water, the report of the professor of chemistry leaves no doubt of the dangerous character of the water. The action proposed would be fully justified. But with regard to the railroad crossings. It would not be wise to attempt to force the railroad ordinances. You can only continue to advise and recommend.

Very truly yours,
(Signed) BENJ. LEE,
Secretary.

9—FROM L. L. HUNTER, TIDIOUTE, CLOSING SCHOOLS DURING AN EPIDEMIC.

TIDIOUTE, PA., *September 15, 1890.*

Secretary State Board of Health:

DEAR SIR: Do the laws applying to boards of health in boroughs in this commonwealth, authorize such boards of health to close the public schools without the consent or authority of the boards of directors of such schools in cases where diphtheria exists in families within the boroughs, and if so, to whom shall the teachers of said schools look for such personal damage or injury as they may experience in consequence. Such a case has occurred here and I write at the request of parties interested.

Yours respectfully,
L. L. HUNTER.

(b.) REPLY OF BENJAMIN LEE, M. D., SECRETARY.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *September 24, 1890.*

MR. L. L. HUNTER, *Tidioute, Pa.:*

DEAR SIR: Your favor of September 15, was somewhat delayed, in consequence of having been sent to Harrisburg.

In reply to your inquiries I would say, that boards of health in boroughs in this country unfortunately do not possess the authority to close the public schools in case of epidemics. They may recommend such action to councils, and, in the event of the councils failing to take action, they may, if the emergency appears to them to warrant it, invoke the aid of the state board of health, which does possess such authority. As such action would be taken for the good of the borough, and especially for the school children, the salaries of the teachers should be paid by the board of education just as though the schools were not interrupted.

Yours very respectfully,
(Signed) BENJAMIN LEE,
Secretary.

10—FROM J. GUY McCANDLESS, M. D., SUPPOSED CASE OF LEPROSY.

PITTSBURGH, PA., *September 20, 1890.*

BENJAMIN LEE, M. D., *Secretary State Board of Health:*

DEAR DOCTOR: Yours received this day and am happy to state that there is no case of leprosy in our city, the case referred to is at the city farm and is one pronounced as scurvy. I did not see it. Had it been one of leprosy I would have notified you of it at once. But as usual the papers got it wrong and made a sensation out of it.

Yours very respectfully,
J. GUY McCANDLESS,
Registrar Board of Health.

11—FEEDING COWS ON BREWERS' GRAINS OR WASTE.

(a.) FROM G. E. BROWNBACK, LINFIELD.

LINFIELD, PA., *September 22, 1890.*

DR. BENJAMIN LEE:

In regard to this distillery waste, is that the brewers' grain? There are parties feeding it? It is four to five weeks old and musty and sour. Does the law allow it fed? I wish you would write to S. R., he brings his milk to one of my creameries and feeds that stale feed.—S. R., Limerick Square, Montgomery county, Pa.

When could I see you and where?

G. E. BROWNBACK.

(b.) FROM W. K. NEWTON, M. D.

PATERSON, N. J., *October 13, 1890.*

BENJAMIN LEE, M. D.,
Secretary of Pennsylvania State Board of Health:

DEAR SIR: Your favor of 2d was sent me from Trenton, where it had been mailed. I resigned all public offices in April, but send you the following statement regarding brewers' grains, the results of former experiments:

1. Brewers' grains in a sweet, fresh condition, when mixed with other feed, make a perfectly healthful food for cattle.

2 Brewers' grains fed to the exclusion of other food affects the milk both in taste and in richness.

3. Brewers' grains fed in a sour fermented condition are injurious to cattle.

Yours truly,
WM. K. NEWTON.

(c.) FROM THOS. J. EDGE, SCECRETARY OF BOARD OF AGRICULTURE,
HARRISBURG, PA., *October 4, 1890.*

DR. BENJAMIN LEE, *Secretary State Board of Health, No. 1532 Pine Street, Philadelphia:*

DEAR SIR: Your favor of the 3d at hand and contents carefully noted. The matter to which you allude is one to which, from a practical standpoint, I have given some attention, and one which, in our battle with "contagious pleuro-pneumonia," repeatedly came up for adjudication, but always with one result and one decision.

You ask, "Do you understand the phrase 'distillery waste' in law is intended to cover brewers' grain also?" In reply I would say, certainly not. Not any more than it will cover the use of inferior corn or bad wheat bran. There is no real connection between "distillery waste" and "brewers' grains," nor is there any similarity between them; one is the product of fermentation and the other of distillation; one process known to be (under proper conditions) advantageous to stock foods, and the other known to be very injurious to food which is intended for live stock. "Brewers' grains" as fed consists of sound, whole and solid grain; "distillery slops or waste" is a hot liquid left after other products are removed, it almost invariably produces disease and cannot possibly under any condition produce first class and thoroughly healthy milk. If you could examine some of the "distillery sheds" of Brooklyn and Long Island you could readily satisfy yourself as to the effect of "distillery slops" on the health of the animals. It is perhaps not too strong a phrase to say that you may find the animals in various stages of *decomposition*, tails dropping off, teeth falling out, the animal in a fearful condition. No such condition exists where "brewers' grains" are used, the reverse is usually the case.

It is claimed that a portion of the injury done to the animals by "distillery waste" is due to the fact that it is fed hot, often so hot that the animals cannot drink it when first run into the troughs, no matter how hungry they may be. A portion of the injury may be due to this cause, but the condition of the animals would be a sufficient proof to any practical dairyman that the feed was injurious both to the animals and to the product. If you have never personally examined this matter, and can arrange to do it, I would advise you by all means to carefully investigate it in your official capacity, for in it you will find enough to satisfy you that there is much to be done to protect the health of citizens and of animals also.

You state that "certain dairymen and creameries who are anxious to maintain the standard of their products" wish to take action in the matter. They are certainly justified in this, but I do not think that you will find practical dairymen who have used brewers' grains condemning their use on the score of any injury to the products of the dairy. Of course if fed in an improper condition they may be injurious, but that may be said of corn meal, wheat bran or in fact of any kind of food.

The law from which you quote is, if I remember correctly, intended for the protection of the health of the people, and its enforcement would therefore come, very properly, within the province of our board, and anything which I can do, either in an official or private capacity, will be at all times at your command for co-operation or assistance of any kind.

Dr. Henry Leffmann, of Philadelphia, and Professor Cochran, of West Chester, food inspectors and microscopists of our board, have repeatedly called the attention of the people of our state to the importance of guarding the milk supplies of our large cities, and their reports from time to time have repeatedly been devoted to this special topic; Professor Cochran has especially devoted much of his time to the question of the milk supply of Philadelphia, and can probably give you much practical and valuable information relating to the question.

If at any time your investigations show that my duty under the provisions of the act of May 9, 1889, can in any way assist you to bring about any needed reform, or in any way assist you in guarding the purity and condition of the milk supply of your city, the assistance will be cheerfully and immediately given.

Respectfully yours,
THOS. J. EDGE,
Secretary, etc.

12—DISPOSAL OF GARBAGE.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE,
PHILADELPHIA, *October 23, 1890.*

DR. LEWIS BALCH, *Secretary State Board of Health, Everett House, New York City:*

DEAR DOCTOR: Your note of inquiry, with reference to the disposal of garbage, dead animals and offal in this city, is received. It is with shame and confusion of face that I call your attention to the enclosed extract from the report of the board of health of Philadelphia for 1889. The health officer assures me that the condition remains unchanged.

There is, however, an abattoir on the Schuylkill, at the western end of the Market street bridge, where large numbers of cattle are slaughtered, and where the offal and excrement are, I think, well and judiciously disposed of. There are large phosphate works and fertilizer works on the Delaware, in the southern part of the city. These are so remote as not to constitute a nuisance to great extent, save to those who are passing up and down the river in boats. The city of Allegheny, in this state, has a garbage crematory, which has been in active operation for the past two or three years, and which is considered successful. They have there the advantage of natural gas, which is a cheap and powerful agent of combustion. I found a somewhat similar crematory in operation at Wheeling, West Virginia. My observations lead me to think that that is probably the most successful solution of the problem. I may add that there are a number of bone-boiling and trying establishments in built-up portions of this city, which do not seem to cause any very serious offense.

I have just been glancing over your last report, which has come since your letter of this morning. I notice that the proposal to establish county boards of health was not carried out, and does not meet with favor with your board. Do you feel quite satisfied with the working of township boards? Our state is still entirely without health organizations. I hope to get things on a better footing in the next legislature. In this state the county seems to be the unit of political organization, and that may make it advisable for us to adopt it for our purposes.

Hoping to hear from you at your leisure,

I am yours
Very truly,
(Signed) B. LEE,
Secretary.

13—DECISION WITH REGARD TO A CITY'S RIGHT TO DRAIN INTO A PRIVATE PROPERTY.

ALBERTSON *v.* THE CITY OF PHILADELPHIA *et al.*

Decided in Common Pleas Court No. 3, July 15, 1882, in equity, upon a motion to continue special (or preliminary) injunction.

The gist of the decision was, that the city of Philadelphia has no right to drain other than surface water into a small stream running through private party.

The bill in equity set forth substantially the following facts: That complainant owned a lot on Woodland avenue, between Fifty-first and Fifty-second streets, on which was a two-and-a-half-story brick building rented as public house and dwelling. At the northernmost end of said lot a small stream crossed Woodland avenue about eight feet below the present level of the roadway, which had been covered for many years, where it crossed said avenue by an arch or culvert extending the width of said avenue. After leaving culvert, stream ran through complainant's ground and passed within a few yards of said dwelling house at a distance of not more than one hundred and fifty feet of a point where it emerged from under roadway, and after numerous turnings left his property at a point about fifty feet distant from the house and ran through property of estate of A. M. Eastwick, emptying into Schuylkill three-quarters of mile from Woodland avenue. Said stream rose from a spring a short distance northwest from Woodland avenue, and had been accustomed to flow without interruption or defilement through complainant's property. Its course was very irregular, partly over rocks and stones. It was about two feet wide and three inches deep, and in dry seasons was almost dry, at all times insufficient to carry off any solid matters. That the city of Philadelphia and Wm. Baldwin, commissioner of highways, had contracted, under alleged authority of an ordinance of March 7, 1882, and were building a sewer on Woodland avenue from point where the stream crossed it, below Fifty-first street to Forty-eighth street, and had connected or were about to connect said sewer with the culvert crossing said avenue, so as to drain the sewer into the stream and to discharge the surface drainage and fæcal, etc., matters into and upon complainant's property. That in addition to dwelling houses there are the stables of the Darby Railroad Company, the West Philadelphia Home for Incurables, and the Divinity School, which would drain into said sewer * * * and would permanently injure said premises.

Eo die (*i. e.* without taking much time to advise, showing it was to the court a plain case), the court ordered that the injunction be dissolved,† and that the defendants be restrained and enjoined from using or permitting the said sewer * * * to be used for any purpose other than surface drainage.

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† I think this should be "continued," not "dissolved," but the decision is perfectly clear.

APPENDIX K.

COMPLAINTS AND ORDERS FOR ABATEMENT OF NUISANCES.

Complaints on which action was taken during the year ending November 18, 1890.

1. Natrona, Allegheny county.
2. Mansfield, Tioga county.
3. McKees Rocks, Allegheny county.
4. Greensburg, Westmoreland county.
5. Hazelton, Luzerne county.
6. Tarentum, Allegheny county.
7. Uniontown, Fayette county.
8. Millersville, Lancaster county.
9. Bridgeport, Montgomery county.
10. Apollo, Armstrong county.
11. Springdale, Allegheny county.
12. McKees Rocks, Allegheny county.
13. Valley View, Schuylkill county.
14. Easton, Northampton county.
15. Swedeland, Montgomery county.
16. McKeesport, Allegheny county.
17. Burgettstown, Allegheny county.
18. Bridgeport, Montgomery county.
19. Blairsville, Indiana county.
20. Mont Clair, Montgomery county.
21. Sunbury, Northumberland county.
22. Bulger, Allegheny county.
23. Saltsburg, Indiana county.
24. Edge Hill, Montgomery county.
25. Sharon Hill, Delaware county.
26. Norwood, Delaware county.
27. Langhorne, Bucks county.
28. Auburn, Schuylkill county.
29. Wallingford, Delaware county.
30. Newville, Cumberland county.
31. Bethlehem, Northampton county.
32. Pottstown, Montgomery county.
33. Punxsutawney, Jefferson county.
34. Horatio, Jefferson county.
35. Viva, Mifflin county.
36. Patterson, Juniata county.
37. Milbourne Mills, Delaware county.
38. Wayne, Delaware county.
39. Berwyn, Chester county.
40. McKees Rocks, Allegheny county.
41. Tusseyville, Centre county.
42. East Latrobe, Westmoreland county.
43. Catasauqua, Lehigh county.

1. Defective drainage at Natrona, Allegheny county. Inspection by Dr. J. R. Thompson. Report: A stream in a foul condition, putrid with human excreta, filth and the offal of a slaughter-house. Action: Railroad company advised to divert this stream into another channel. Instructions also sent to the proprietor of the slaughter-house to deposit no more offal in this stream.

2. Defective drainage at Mansfield, Tioga county. Inspection by Dr. E. D. Payne. Report: Matter was not of such a nature as necessitated the board's interference.

3. Dumping of manure and refuse at McKees Rocks, Allegheny county. Inspection by J. R. Thompson. Report: Complaint confirmed. Action: The secretary ordered an abatement forthwith.

4. Insanitary condition of Greensburg, Westmoreland county. Inspection by Dr. W. E. Matthews. Report: Confirmed the complaint and stated the most serious obstacle was lack of necessary grant of power in charter of borough incorporation. Action: Letter of instructions sent to burgess.

5. Complaint of insanitary conditions at Hazleton, Luzerne county.

6. Complaint of insanitary conditions at Tarentum, Allegheny county.

In cases Nos. 5 and 6 no reply was received or affidavit forthcoming.

7. Nuisance from mill race, at Uniontown, Fayette county. Inspection by Dr. C. L. Gummert. Report: Confirmed the complaint. Action: The secretary forthwith sent notice declaring the race a nuisance and requesting an abatement.

8. Nuisance from drain at Millersville State Normal School, Lancaster county. Inspection by board. Report: Complaint confirmed, stream being badly polluted. Action: The board directed the attention of the trustees to be drawn to the nuisance forthwith.

9. Nuisance from drainage at Bridgeport, Montgomery county. Inspection by committee on drainage, etc. Report: Complaint confirmed. Action: The secretary ordered an abatement forthwith.

10. Complaint of nuisance from refuse, etc., at Apollo, Armstrong county.

11. Nuisance at Springdale, Allegheny county.

12. Nuisance at McKees Rocks, Allegheny county.

13. Nuisance at Valley View, Schuylkill county.

14. Nuisance at Easton, Northampton county.

15. Nuisance at Swedeland, Montgomery county.

16. Nuisance at McKeesport, Allegheny county.

17. Nuisance at Burgettstown, Allegheny county.

18. Nuisance at Bridgeport, Montgomery county.

19. Nuisance at Mont Clair, Montgomery county.

In cases Nos. 10 to 19 no reply had been received or affidavit forthcoming.

20. Nuisance from insanitary slaughter-house at Blairsville, Indiana

county. Inspection by Dr. W. E. Matthews. Report: Complaint confirmed. Action: The board ordered proprietor to abate the nuisance forthwith.

20. Complaint of nuisance from a drain at Sunbury, Northumberland county. Action: The board decided to take no steps in this case.

22. Nuisance from a cheese factory at Bulger, Allegheny county. Inspection by Dr. J. R. Thompson. Report: Complaint confirmed. Action: The proprietor was directed to abate the nuisance forthwith.

23. Nuisance from poisonous chemicals at Saltsburg, Indiana county. Inspection by Dr. J. R. Thompson. Report: Complaint confirmed. The board decided to take no further action in this matter.

24. Nuisance at Edge Hill, Montgomery county. Inspection by Dr. W. B. Atkinson. Report: Complaint confirmed. Action: The secretary ordered abatement, which was promptly complied with.

25. Nuisance from foul drain at Sharon Hill, Delaware county. Inspection by Dr. W. B. Atkinson. Report: Complaint confirmed. Action: Abatement ordered at once, which was complied with.

26. Defective drainage at Norwood, Delaware county. Inspection by Dr. W. B. Atkinson. Report: Complaint confirmed. Action: The board ordered notices requiring abatement served on the parties at once.

27. Complaint of insanitary condition of cottages at Langhorne, Bucks county. Inspection by Dr. W. B. Atkinson. Report: Cellars, etc., of houses in foul condition and drainage bad. Action: Notices served on the owners to abate the nuisance at once.

28. Nuisance from foul condition of canal bed at Auburn, Schuylkill county, causing malarial fevers. Action: The complaint being confirmed, the board notified the canal company to remedy this condition of the canal.

29. Defective drainage at Wallingford, Delaware county. Inspection by Dr. W. B. Atkinson. Report: Several nuisances caused by deficient drainage. Action: Notice served on the several parties to abate the nuisances.

30. Nuisance rrom polluted dam at Newville, Cumberland county. Inspection by Dr. R. L. Sibbet. Report: Polluted condition of dam confirmed. Action: Notice served on all parties to abate the nuisance.

31. Nuisance from garbage dumping at Bethlehem, Northampton county. Inspection by Dr. C. McIntire, Jr. Report: Nuisance partially confirmed. Action: Secretary suggested to the burgess certain precautions being adopted.

32. Complaint of nuisance from poisoned dead fish in race at Pottstown, Montgomery county. Inspection by Dr. W. B. Atkinson. Report: Little ground for complaint. Action: Referred back to fish warden, complainant.

33. Insanitary condition of Punxsatawney, Jefferson county. Inspection by Dr. S. M. Free. Report: Complaint confirmed, condition of

town being deplorable. Action: Letter suggesting certain precautions being adopted sent to burgess.

34. Insanitary condition of Horatio, Jefferson county. Inspection by Dr. S. M. Free. Report: Complaint confirmed. Action: Letter to burgess suggesting certain precautions being adopted.

35. Nuisance from unburied diseased hogs at Vira, Mifflin county. Their burial was ordered immediately.

36. Nuisance from leaky privy at Patterson, Juniata county. Inspection by Dr. A. B. Brumbaugh. Complaint confirmed. Action: Board directed the removal of this vault, which, after some delay, was complied with.

37. Complaint of nuisance at Milbourne Mills, Delaware county.

38. Complaint of nuisance at Wayne, Delaware county.

39. Complaint of nuisance at Berwyn, Chester county.

40. Complaint of nuisance at McKees Rocks, Allegheny county.

41. Complaint of nuisance at Tusseyville, Centre county.

42. Complaint of nuisance at East Latrobe, Westmoreland county.

43. Complaint of nuisance at Catasauqua, Lehigh county.

In cases Nos. 36 to 43 no reply had been received or affidavit forthcoming.

APPENDIX L.

LAWS RELATING TO PUBLIC HEALTH AND SAFETY, PASSED IN 1889.

I. STATE BOARD OF HEALTH.

To provide for the current expenses of the state board of health and vital statistics for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-nine, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety.

480. The following sums be and are hereby specifically appropriated to defraying the expenses of the state board of health and vital statistics for two years, namely: for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-nine, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety:

$4,000 for salary of secretary, etc.

For salary of the secretary and executive officer for two years, four thousand dollars. For employment of necessary clerical aid in the office of the board, for postage, telegrams, express charges and incidental office expenses, for traveling and other necessary expenses of the members and secretary of the board, while engaged on the actual duties of the board, and for sanitary inspections, control of epidemics and laboratory investigations and analyses, for two years, six thousand dollars or so much thereof as may be necessary.

$6,000 for clerical aid, sundry expenses, and sanitary investigation.

Manner of expenditure.

The amounts expended from the above appropriation shall be distributed by the said board in accordance with the requirements of the sanitary service of the commonwealth and with reference to such emergencies as may arise, and shall be settled with the Auditor General and State Treasurer in the usual manner

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To amend an act, entitled "An act to establish a state board of health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth," approved the third day of June, one thousand eight hundred and eighty-five, providing the expenses therefor.

481. That section nine of the act, entitled "An act to establish a state board of health for the better protection of life and health, and to prevent the spread of contagi-

ous and infectious disease in this commonwealth," approved the third day of June, one thousand eight hundred and eighty-five, which reads as follows:

Section 9, act of June 3, 1885, cited for amendments.

"SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill and to prepare plans and reports relative thereto; but no more than two thousand dollars shall be expended in any one year for such special sanitary service," be amended so as to read as follows:

Amendment as to amount of expenditures.

SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill and to prepare plans and reports relative thereto; but no more than four thousand dollars shall be expended in any one year for such special sanitary service.

482. That section ten of the same act, which reads as follows:

Section 10, act of June 3, 1885, cited for amendment.

"SECTION 10. It shall be the duty of said board on or before the first Monday of December in each year to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state, and such report shall set forth the action of the said board and its officers and agents and the names thereof for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health, and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board and a detailed statement of the manner of its expenditures during the year last passed, but its total expenditures shall not exceed the sum of five thousand dollars in any one year," be amended so as to read as follows:

Amendment as to amount of expenditures.

SECTION 10. It shall be the duty of said board, on or before the first Monday of December, in each year, to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state, and such report shall set forth the action of the said board and its officers and agents and the names thereof for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last passed, but its total expenditures shall not exceed the sum of ten thousand dollars in any one year.

II. BOARDS OF HEALTH FOR CITIES OF THE THIRD CLASS.

Board of health may be created.

483. The councils of any city of the third class may, by ordinance, create a board of health as herein provided, with the powers and duties herein enumerated.

To consist of five members.
Qualifications.
Districts to be formed.
Mayor to appoint with consent of councils.
Removals.
Vacancies.
Term of appointees.
Regular term.

484. The said board shall consist of five members, who shall serve without compensation, and none of whom shall be members of councils. At least two of their number shall be reputable physicians of not less than two years' experience in the practice of their profession. The board shall be appointed by districts to be fixed by councils, representing as equally as may be all portions of the city, and shall serve for the term of five years from the first Monday of April succeeding their appointment. The mayor shall nominate, and by and with the consent of the select council appoint the members of said board, and shall in like manner remove any or all of them for official misconduct or neglect of duty, and fill all vacancies for the unexpired term. At the first appointment the mayor shall designate one of the members to serve for one year, one to serve for two years, one to serve for three years, one to serve for four years and one to serve for five years, and thereafter one member of said board shall be appointed annually to serve for the term of five years.

Members to be sworn.
To organize annually.
Secretary and his duties.
Health officer and his duties.
Salaries.

485. The members of the board shall severally take and subscribe the oath herein prescribed for city officers, and shall annually organize by the choice of one of their number as president. They shall elect a secretary, not of their body, who shall keep the minutes of their proceedings and perform such other duties as may be directed by the board, and a health officer, who shall execute the orders of the board, and for that purpose the said health officer shall have and exercise the powers and authority of a policeman of the city. The secretary and health officer shall receive such salary as may be fixed by

the board, and shall hold their offices during the pleasure of the board. Bonds They shall severally give bond to the city in such sums as may be fixed by ordinance, for the faithful discharge of their duties, and shall also take and subscribe the oath required of members of the board. Fees to be paid into city treasury All fees which shall be collected or received by the board, or by any officer thereof in his official capacity, shall be paid over into the city treasury monthly, together with all penalties which shall be recovered for the violation of any regulation of the board. President and secretary authorized to administer oaths. The president and secretary shall have full power to administer oaths or affirmations in any proceeding or investigation touching the regulations of the board, but shall not be entitled to receive any fee therefor.

Powers and duties as to infectious diseases. 486. The said board of health shall have power and it shall be their duty, to make and enforce all needful rules and regulations to prevent the introduction and spread of infectious or contagious diseases, by the regulation of intercourse with infected places, by the arrest, separation and treatment of infected persons, and persons who shall have been exposed to any infectious or contagious disease, and by abating and removing all nuisances which they shall deem prejudicial to the public health; to enforce vaccination, to mark infected houses or places, to prescribe rules for the construction and maintenance of house drains, waste and soil pipes and cess-pools, and to make all such other regulations as they shall deem necessary for the preservation of the public health. They shall also have power, with the consent of councils, in case of the prevalence or apprehended prevalence of any contagious or infectious disease, within the city, May establish hospitals. to establish one or more hospitals and to make provision and regulations for the management of the same. The board may in such cases appoint as many ward or district physicians and other sanitary agents as they may deem necessary, Physicians and sanitary agents. whose salaries shall be fixed by the board before their appointment. Duties of all practicing physicians. It shall be the duty of all physicians practicing within the city to report to the secretary of the said board of health the names and residences of all persons coming under their professional care afflicted with such contagious or infectious diseases, in the manner directed by the said board.

Abatement of nuisances. 487. The said board of health shall have power, as a body or by committee, as well as the health officer, together with his subordinates, assistants and workmen, under and by order of the said board, to enter at any time upon any premises in the city upon which there is suspected to be any infectious or contagious disease, or nuisance detrimental to the public health, for the purpose of examining and abating the same; and all written orders for the removal of nuisances issued to the said health officer by order of said board, attested by the secretary, shall be executed by him and his subordinates and workmen, and the costs and expenses thereof shall be recoverable from the owner or owners of the premises from which the nuisance shall be removed, or from any person or persons causing or maintaining the same, in the manner herein provided.

Costs and expenses.

Registration of marriages, births and deaths.

Rules and regulations to have the force of ordinances.

Penalties, etc., how to be recovered.

SECTION 6. The said board of health shall have power to create and maintain a complete and accurate system for the registration of all marriages, births and deaths, which may occur within the city, and to compel obedience to the same upon the part of all physicians and other medical practitioners, clergymen, magistrates, undertakers, sextons and all other persons from whom information for such purposes may properly be required. The board shall make, and cause to be published, all necessary rules and regulations for carrying into effect the powers and functions with which they are hereby invested, which rules and regulations, when approved by the mayor, shall have the force of ordinances of the city, and all penalties for the violation thereof, as well as expenses necessarily incurred in carrying the same into effect, shall be recoverable for the use of the city, in the same manner as penalties for the violation of city ordinances, subject to the like limitation as to the amount thereof.

Estimates for probable receipts and expenditures.

Appropriations.

Annual report.

Contents thereof.

Copies for state board of health.

488. It shall be the duty of the board of health to submit annually to councils before the commencement of the fiscal year, an estimate of the probable receipts and expenditures of the board during the ensuing year, and councils shall then proceed to make such appropriation thereto as they shall deem necessary; and the said board shall, in the month of January of each year, submit a report in writing to councils of its operations for the preceding year, with the necessary statistics thereof, together with such other information or suggestions relative to the sanitary condition and requirements of the city as it may deem proper, and councils shall publish the same in their official journal. It shall also be the duty of the board to communicate to the state board of health copies of all

its reports and publications, together with such sanitary information as may from time to time be required by said state board.

III. BOARDS OF HEALTH AUTHORIZED TO FILE WRITS UPON LIENS FOR WORK DONE.

Authorizing writs of *scire facias* and *levari facias* to be issued upon liens filed for work done, or materials furnished, by the board of health or any municipal corporation.

Writs of *scire facias* and *levari facias* to issue for collection of liens.

489. *Be it enacted, etc.*, That when a lien for work done or materials furnished by or under the authority of the board of health, or any municipal corporation, shall be authorized to be filed under any general or special act, and no process is provided for the collection of the debt, charge or assessment upon which such lien has been or may hereafter be filed, writs of *scire facias* and *levari facias* may be issued thereon, as in the case of mechanics' liens, and the same costs shall be taxed.

Costs.

Repeal.

SECTION 2. All laws or parts of laws inconsistent herewith be and the same are hereby repealed.

IV. SEWERAGE, WATER SUPPLY, CESS-POOLS.

CITIES OF THE SECOND CLASS AUTHORIZED TO CONSTRUCT SEWERS.

Sewers.

Cost of sewers to be assessed to properties benefited.

490. The councils of any city of the second class may authorize the construction of sewers in any street, lane or alley, public ground or private property, the cost of which shall be assessed on the property benefited in the same manner as hereinbefore provided for the grading, paving or macadamizing of streets.

Sewers may be laid through private property.

491. Said city shall have power, when necessary in the construction of sewers, to lay the same through private property and the damages, if any, shall be included in the assessment as part of the cost and expense of the sewer.

Cost of engineering to be included in expense of improvement.

492. The cost of engineering and all other expenses incurred by the city in opening, grading, paving and curbing of streets, or the construction of sewers, shall be assessed and collected as part of the cost of such improvements.

Plan and report of viewers to be given to city treasurer.

493. After the final approval by councils or the court, in case of appeal of the report of the board of viewers of

street improvements in grading, paving or macadamizing of any street, lane or alley, or the construction of any sewer, under or by virtue of the provisions of this act, the plot or plan, together with the report of the board of viewers, shall be handed over to the city treasurer, who, as soon as he shall have received the same, shall cause notice of the amount assessed upon each property to be given to the owner thereof, and that if the same be not paid within thirty days from the time of said notice, it will be filed as liens against said property with interest, costs and fees. If said assessments are not paid within thirty days after service of the notice aforesaid, the treasurer shall hand over to the city attorney the said plot and plan, together with the report of the board of viewers, with a list or statement of the unpaid assessments, and the city attorney shall file a lien against each property for the amount of the assessment thereon remaining unpaid within the time hereinafter prescribed, with interest from the time notice for payment was given and five per centum additional as attorney's fees for collection.

His duty as to collection of damages assessed.

Duty of the city attorney relative thereto.

CITIES OF THE THIRD CLASS AUTHORIZED TO CONSTRUCT SEWERS.

494. The councils of any city of the third class may provide by ordinance for the division of said city into sewer districts, and may direct the city engineer to make an estimate of the cost and expense of constructing any main sewer, or re-constructing the same, and to report to councils what portion of said cost and expense is required for main sewerage, and what portion of the same is required for local sewerage, for any lots or lands to which any portion of such main sewer to be designated by councils, shall serve for local sewerage, and it shall be lawful for the city councils to cause sewers of all kinds to be constructed or re-constructed without petition therefor from the property owners, and to provide for the payment of such sewers from the general revenues of the city, or by assessing the cost thereof as follows, namely: In the case of main sewers, such proportion of the cost and expense of the same as is required for local sewerage shall be assessed upon the property abutting thereon, by an equal assessment by the foot front, or according to the assessed valuation of such property for purposes of city taxation, or in proportion to benefits upon lots or lands benefited by such local sewerage, as councils shall

Sewerage districts.

Estimates by city engineer.

Main and local sewerage.

Councils may order construction and provide for payment.

Assessment on property abutting thereon.

in each case determine, and the cost of such main sewer, over and above the portion thereof assessed for local sewerage, as above provided, shall be assessed upon the lots or lands within the sewer district where the work is to be done, according to the valuation of such lots or lands for city purposes, or according to benefits, or paid from the general revenues as councils may in each case determine. The cost of lateral sewers shall be assessed upon the lots or lands along or through which such lateral sewers run, according to the valuation of such lots or lands as aforesaid, or in proportion to benefits upon lots or lands benefited, or by an equal assessment by the foot front upon the lands along or through which such sewers run, as councils may determine.

Lateral sewers.

Sewerage assessment, how made.

495. If councils determine to make an assessment for main, local or lateral sewerage according to benefits, they shall appoint three disinterested citizens as viewers, who, or a majority of whom, shall assess the estimated expenses, as reported by the city engineer, of such main sewerage, on all the lots or lands in the sewer district wherein the sewer is to be constructed or re-constructed, in proportion to benefits, and the estimated expenses, as reported by said engineer, or such local or lateral sewerage on such lots or lands as will, in their opinion, be benefited thereby, whether fronting on the ground in which the sewer is to be constructed or re-constructed or not, in proportion as nearly as may be to the benefits which may result to each lot or parcel of land.

Report to be filed by assessors.

Notice of filing of said report.

Objections to said report.

Assessments modified.

496. Said viewers, or a majority of them, shall make report in writing specifying the amount assessed by them upon each lot or parcel of land for main or local sewerage separately, and file the same with the city clerk within such time as the councils shall direct. After the report is filed, councils shall cause not less than ten days' public notice to be given in two newspapers of the city, if so many be published therein, of the object of such assessments, and that the same will come before them for confirmation at a time to be specified in said notice. Objections to the assessment shall be in writing and be filed with the city clerk, and may be heard before the city councils in joint convention at the time specified in the notice. Councils may, after hearing objections, modify, set aside or confirm said assessments. If councils set aside the first or any other assessment, they may appoint other viewers of the same qualifications as herein-

Re-assessments.

before provided, and cause new assessments to be made, and the proceedings shall be the same as herein directed in case of the first assessment.

Collection of such assessment.

Upon default lien to be entered

Interest thereon

497. After making assessments for sewerage of any kind, councils may direct that they be certified to the city treasurer, or to such party as said assessments may be assigned to for collection; and if such assessments be not paid within such time as councils may by ordinance prescribe, it shall be lawful to file liens therefor in the prothonotary's office of the proper county, as provided by this act, and said liens shall bear interest from the time the assessments were payable, at the rate of six per centum per annum until paid.

Branch sewers and house connections

Extent thereof

Costs and expenses thereof

When councils may cause connections to be made.

498. The city councils may provide by ordinance for the construction in any street or public highway within such city of all proper house connections and branches leading into main or lateral sewers, or connecting with gas, water, steam or other pipes in said streets or highways which they may deem necessary: *Provided*, That in no case, except as a sanitary measure, of which councils shall judge, shall they require such house connections to be extended further from such sewers or from such gas, water, steam, or other pipes than to the inner line of the curbstone of such street or highway. Councils may provide for the assessment of the cost and expense of such connections upon the lots or parcels of lands for the accommodation of which such connecting branches and pipes may be constructed, or may collect the same from the owner or owners of such lot or lots, or parcels of land, by action at law, or from the persons or corporations owning or operating such gas, water, steam, or other pipes. Councils may also notify such owners to make such connections within such time as they may direct, and in default of compliance with such notice cause the said connections to be made, and collect the cost thereof from the parties owning or operating such gas, water, steam, or other pipes with interest.

RIGHT OF EMINENT DOMAIN BY CITIES OF THE THIRD CLASS.

Assessment of damages for public improvements

499. Any city of the third class shall have power, whenever it shall be deemed necessary, either in the laying out, opening, widening, extending or grading of streets, lanes or alleys, or in the erection or construction of water, gas or electric light works, slopes, embankments or sewers, or in the changing of water courses, or for any

If compensation cannot be agreed on

Viewers

Notice of the meeting of viewers

other purpose, authorized by this act to take, use, occupy or injure private lands, property or materials; and in case the compensation for the damages done or the benefits accruing therefrom have not been agreed upon, the court of common pleas of the proper county, or any law judge thereof in vacation, on application thereto by petition by said city, or by any person interested, shall appoint three discreet and disinterested freeholders of the said city as viewers, to view and ascertain the damages done, and the benefits which have accrued, by reason of the said taking, use, occupancy or injury, and shall appoint a time, not less than twenty nor more than thirty days thereafter, for said viewers to meet at or upon the premises where the damages are alleged to be sustained, or the property taken, or on the line of said street or sewer improvement, as the case may be, of which time and place ten days' notice shall be given by the petitioners to the said viewers and to all parties interested, by personal service upon the parties, their agents, attorneys or legal representatives, by publication in one or more newspapers, or by handbills posted upon the premises or otherwise, as the said court shall direct, having regard to the circumstances of each case.

Assessment of damages.

Report to the court.

500. The said viewers or any two of them, having been duly sworn or affirmed faithfully, justly and impartially to decide and true report to make concerning all matters and things to be submitted to them, and in relation to which they are authorized to inquire, in pursuance of the provisions of this act, and having viewed the premises, or examined the property or materials, shall estimate and determine the quantity, quality and value of said lands so taken, occupied or injured, or to be taken, occupied or injured, or the property and materials so used or taken away, as the case may be, and having a due regard to, and making just allowance for, the advantages which may have resulted, or which may seem likely to result to the owner or owners of said lands, property or materials in consequence of the making of the improvements aforesaid, for which the property or materials are to be taken, and after having made a fair and just comparison of said advantages and disadvantages, they shall estimate and determine their value, and whether any, and if any, what amount of damages has been or may be sustained, and to whom the same is payable, and after having determined the damages sustained to all the properties affected

by said improvement, together with the benefits, as hereinafter mentioned, they shall make report thereof to the said court.

Councils to provide for payment of such damages.

Manner of making assessments.

Benefits not to exceed the damages

Appeal

501. The councils of said cities shall have power to provide by ordinance for the payment of damages sustained by the making of the improvements aforesaid, or by the vacation of any public highway, either by the city or by assessments upon property benefited by such improvements, and in the latter case the viewers appointed to assess damages shall also assess upon any property benefited by such improvements, whether said property be immediately adjacent thereto or in the vicinity thereof, such amount for the special advantages which may accrue to the said several properties from such improvements as they may deem proper, and shall report the same to said court: *Provided*, That assessments for benefits shall not exceed the damages awarded or agreed upon: *And provided further*, That parties assessed for benefits shall have the same right to file exceptions to said report, or to appeal therefrom, as is hereby provided for in the case of assessments of damages for property taken.

Judgment on the award.

Collection thereof.

Expenses

Compensation to viewers

502. If any damages be awarded, and the report be confirmed by the said court, judgment shall be entered thereon, and if the amount thereof be not paid within thirty days after the entry of such judgment, execution may then issue thereon, as in other cases of debt, for the sum so awarded, but assessments for benefits shall be collected as hereinafter provided for. The costs and expenses incurred in the proceedings aforesaid shall be defrayed by the said city, and each of the said viewers shall be entitled to two dollars per day for every day necessarily employed in performance of the duties herein prescribed.

In case of disagreement as to amount of damages, bond to be given.

Condition of bond.

503. In all cases where the parties have not agreed upon the amount of damages claimed, or where, by reason of the absence or legal incapacity of the owner or owners, no such agreement can be made for lands, property or materials to be taken, occupied or injured, the city shall tender sufficient security to the party claiming or entitled to any damages, or to the attorney or agent of any person absent or to the agent or other office of a corporation, or to the guardian or committee of any one under legal incapacity, the condition of which shall be that the said city shall pay, or cause to be paid, such amount of damages as the party shall be entitled to

Proceedings on refusal to accept bond tendered.

receive after the same shall have been agreed upon by the parties, or assessed in the manner provided for by this act: *Provided*, That in case the party or parties claiming damages refuse, or do not accept the security so tendered, the said city shall then give the party, his or their agent, attorney or other officer a written notice of the time when the same will be presented for filing in the court, and thereafter the said city may present said security to the court of common pleas of the county where the lands or other property is situated, and, if approved, the security shall be filed in said court for the benefit of those interested, and recovery may be had thereon for the amount of damages assessed, if the same be not paid, or cannot be made by the execution on the judgment in the issue formed to try the question.

When to be appointed.

Appeal from report of viewers.

Affidavit

Trial by jury.

Notices.

Exceptions.

504. The viewers provided for in the foregoing sections of this article may be appointed before, or at any time within six years after the entry, taking, appropriation or injury of any property or materials for constructing said improvements, and upon the report of said viewers, or any two of them being filed in said court, any party may within thirty days thereafter file his, her or their appeal from said report to said court. Such appeal shall be in writing, and accompanied with an affidavit of the appellants or their agent or attorney, that the same is not taken for the purpose of delay, but because the affiant firmly believes that injustice has been done, and after such appeal either party may put the cause at issue in the form directed by said court, and the same shall be tried by said court and jury, and after final judgment either party may have a writ of error therefrom to the supreme court in the manner prescribed in other cases. The said court of common pleas shall have power to order what notices shall be given in connection with any part of the proceedings, and may make all such orders as it may deem requisite. If any exceptions be filed with any appeal to the proceedings, they shall be speedily disposed of, and if allowed, a new view shall be ordered, and if disallowed, the appeal shall proceed as hereinbefore provided.

Liability of city for damages in case of repeal of ordinance, etc., after assessment of damages.

505. In case any such city shall repeal any ordinance passed, or discontinue any proceeding taken, providing for any of the improvements mentioned in the first section of this article, prior to the entry upon, taking, appropriation or injury to any property or materials, and within thirty days after the filing of the report of viewers

assessing damages and benefits, the said city shall not thereafter be liable to pay any damages which have been or might have been assessed, but all costs upon any proceeding had thereon shall be paid by said city.

Costs

Damages for lands heretofore occupied and used.

506. In all cases where lands or property have been heretofore taken, used, occupied or appropriated for any of the purposes aforesaid within five years last past, or where any ordinance has been passed providing for such taking, using or occupancy, and the damages sustained thereby or the benefits accruing therefrom have not yet been legally determined, it shall be lawful to proceed and determine said damages and benefits and collect the same under the provisions of this article, with the same effect as if said improvements had been undertaken or proceeded in after the passage of this act.

BOROUGHS AUTHORIZED TO CONSTRUCT SEWERS.

To enable the boroughs to adopt and construct sewage systems and to assess and collect the cost thereof.

Burgess and town council may adopt sewage system.

507. The burgess and the town council of any borough within this commonwealth, now or hereafter to be incorporated, upon a petition of a majority of the property owners on any street or streets in any said borough, shall have full power and authority, by ordinance or ordinances duly passed, to adopt and construct such system or systems of public sewerage, as in the judgment of the said council may be necessary from time to time, for the disposal of the waste water and other sewage matter from said borough; and for this purpose the said burgess and councils shall have full power to fix the place or places in and along the streets, lanes, alleys, courts or highways in said borough, where sewer mains and drains and branches thereof shall be laid down, and to prescribe the manner in which they shall be constructed.

May assess the cost thereof on adjoining properties.

508. Whenever any borough shall determine to construct any public sewer, it shall have power, by ordinance or ordinances duly passed, to assess the cost thereof as a sewage tax upon the property adjoining or adjacent to the same, either by the foot front or in such other manner and in such proportions and amounts as to the burgess and town council may seem just and equitable, which assessment of sewage tax, duly certified under the seal of the said borough, attested by the burgess or the president of council and clerk thereof, shall be collectible from the owner of such property as debts of like amount

How assessment to be collected.

are now by law collectible, and such certificates of assessments shall be *prima facie* evidence in any suit for recovering the same, of the correctness and validity thereof: *Provided*, That nothing in this act shall prevent the construction of any public sewer and the payment of the same by general taxation, when the same is for the general health and public welfare of said borough.

May pay therefor by general taxation

When property owners fail to pay, claim may be filed in common pleas.

509. If the owners or owner of any property against which an assessment for sewage tax has been laid, as provided for in the preceding section, shall fail or refuse to pay such assessment within sixty days after having notice of the same, it shall be lawful for the said borough, in its corporate name, to immediately file a claim therefor in the court of the common pleas of the proper county, against the property upon which said assessment is laid, which claim shall set forth the name of the then owner or reputed owner of the property and a sufficient description of the property to identify it with the amount of the assessment, and shall be indexed as mechanics' or municipal claims are in the said court. And from the time of filing such claim it shall be and remain a lien upon the property described therein, prior to all others thereafter attaching thereto, for the period of five years; and said lien shall be collectible, with interest from the date of filing and costs, in the same manner as mechanics' liens are collectible in this commonwealth.

What claim shall set forth

To be indexed.

A prior lien of five years

How collectible

Regulations of connections with sewage system

510. The burgess and town council of any borough, upon adopting and proceeding to construct a system of public sewage, shall have full power and authority by ordinance or ordinances duly passed to provide for and regulate the manner in which, and the terms upon which, connections therewith by property owners may be made, and whenever the said borough shall deem it necessary and proper for the preservation of the public health or for other cause, either upon the report of any health committee or board of health or otherwise, that any property owner should connect his or her premises with the public sewer, for the purpose of having the fecal matter and other wastes therefrom discharged into such sewer, the burgess and town council thereof shall have power to compel such connection to be made whenever such property abuts upon or is within fifty feet of a sewer main or branch thereof, in the same manner and under the same regulations as other connections with said sewer are made. And if any property owner, after sixty days' notice so to do by resolution

In case of refusal to connect properties therewith.

of the said council, shall refuse to have his premises so connected, it shall be lawful for the said burgess and council to enter upon said premises and have the same done and to collect the cost thereof as a sewage tax from such property owner, either by personal action or by lien against the premises, in the same manner as is hereinbefore provided for the collection of other sewage tax. The said council shall also have power to enforce, by appropriate penalties, such regulations as it may ordain with reference to the proper use, connection with and maintenance of such sewage system.

Penalties.

Further powers of burgess and town council.

511. To effectually carry out the foregoing provisions of this act, the burgess and town council of any borough shall have full power to do and ordain whatever may be necessary in order to secure a proper and safe disposal of the sewage from any borough; and for this purpose it shall be lawful for the said burgess and town council to extend the necessary sewer mains or outlets beyond the limits of such borough, to the point or points where such sewage is to be deposited, and the said borough by its agents, engineers and workmen, shall have full power to enter upon and construct such mains or outlets in and along any public highway, or in and across any private lands, at such place or places and in such manner as shall, by ordinance, be directed, and likewise to enter upon, condemn and take such lands, property or materials, for the construction of all such sewer mains and outlets and works as may be necessary for the disposal of such sewage: *Provided however*, That no borough ordinance for the construction of any sewer beyond borough limits, or works connected therewith, shall be adopted until notice thereof has been given, by the publication of the proposed ordinance at length for at least four weeks, in not less than one newspaper published in said borough or in the county in which said borough is situate, and also by having copies of such proposed ordinance served upon all the land owners through whose land such sewer is to pass, at least ten days before final action thereon.

May extend mains beyond borough limits.

May enter upon highways and on private lands.

Notice to land owners.

Damages to be first secured.

512. Before any entry shall be made upon private property, without the owner's consent, for the purpose of laying down any sewer or outlet therefrom or constructing works connected therewith as provided for in the preceding section, security for all damages which may be done thereby shall first be given to such owner, in such form and in such amount as a court of common pleas of the

How damages to be assessed.

proper county may direct, and all damages caused by the construction of any such sewer or sewer works, or by the taking of lands and materials therefor, shall be ascertained in the same manner as damages for the taking of lands for railroad purposes are now ascertained in this commonwealth, and shall be paid out of the borough treasury.

CITIES OF THE THIRD CLASS AUTHORIZED TO ESTABLISH WATER AND LIGHTING DEPARTMENTS.

513. The councils of any city of the third class are hereby authorized and empowered to purchase, for such price as may be agreed upon by the councils of the city and a majority of the stockholders of the company, all the real, personal and mixed estate of any water, gas or electric light company or companies in such city, or adjacent thereto, and thereupon the said city shall possess and exercise all the rights, powers, privileges and franchises by law belonging or pertaining to such company or companies and may take and appropriate any stream or streams of water, spring or springs, lands, tenements, hereditaments, property and materials, near or accessible to such city, which may be necessary for the erection and maintenance of water, gas or electric light works, and for the supplying of said city with water or light, and may enter into and upon any lands, inclosures, streets or highways to procure materials for the construction of said works, doing as little damage as possible to property, and making compensation to the owner or owners of all species of property taken, appropriated or injured by them for the purpose aforesaid, as herein provided; but the powers granted by this section shall not be exercised by councils until authority so to do shall have been given them by a majority of the voters of such city, at a special election held for that purpose, of which election the mayor shall give notice as provided for municipal elections.

Compensation.

Powers granted in this section to be exercised only after an election thereon.

Water and lighting department to be established.

514. Any city which now has the title to any water, gas or electric light works, by conveyance to the same in its corporate name, or which may hereafter erect or purchase water, gas or electric light works under the provisions of this act, are hereby empowered to create a department to be called the water and lighting department, and for the organization and government of the same the councils are hereby authorized and empowered to divide the city into three districts for the election of a board of commissioners, which districts shall be numbered one, two and three; one commissioner to be chosen from each

Districts to be formed.

Commissioners to be elected

respective district, of which he shall be a resident at the time of his election, and no member of councils, or person holding any city office, shall be eligible as a member of said board.

515. The councils of such city creating such department as aforesaid, may on the second Monday of April, or within thirty days thereafter, in joint convention, elect one person from each of said districts, as a member of the board of commissioners of the water and lighting department; and at the first election each member of councils shall vote for but two commissioners, and the three persons, being one from each of said districts, having the highest number of votes shall be declared elected. The commissioners so elected shall serve for the term of one, two and three years respectively, to be computed from the date of election, and until their successors are duly elected and qualified. The term of each shall be determined by lot at the first meeting of the board, and thereafter on the second Monday of April of each year, or within thirty days thereafter, the councils shall, in joint convention, elect one commissioner to serve for the term of three years.

Election of commissioners.

Term of service

Regular term.

516. The members of the board of commissioners created as aforesaid, shall receive such compensation for their services as may be provided by ordinance. Before entering upon their respective duties they shall take and subscribe the oath herein prescribed for city officers, and they shall be removable by councils for misdemeanor in office or neglect of duty; and all vacancies occurring in the board shall be filled by councils for the unexpired term.

Compensation

To be sworn.

Removals

517. It shall be the duty of the board to take charge of the water and lighting department so created as aforesaid, and by their sole authority to employ and dismiss at pleasure a superintendent and a clerk, who shall be secretary of the board, whose compensation shall be fixed by councils, and to employ such laborers, mechanics and workmen as they may deem necessary for the economical and efficient administration of said department. They shall purchase such materials and supplies as may be required for keeping the works in good repair, and have charge and control of all constructions, repairs, enlargements and extensions of the works, and shall conduct and manage the affairs and business of the department

Their powers and duties.

Superintendent.

Clerk, his duties and compensation

Supervision of works.

in accordance with law and the directions of the city councils.

Estimates of improvements.

Suggestions as to improvements.

No improvements without consent of councils.

518. The said board of commissioners so created shall, whenever called upon by councils, make and submit to them full estimates of the cost, charges and expenses of any new work, enlargement, extension of water or lighting supply, or alteration which councils may contemplate making relative to said works; and said board may, at any time, submit to councils any suggestions and estimates they may see proper to make touching the improvement, extension or enlargement of said works, but no new construction, re-construction, extension, supply of water or light, or enlargement of said works shall be undertaken by said commissioners so created, or materials or supplies be purchased therefor, without the previous consent and direction of councils.

Duties as to extension of works.

Rate per feet to be charged against owners of houses, etc., on each side of the street.

Extensions may be made at cost of city.

519. Whenever an extension of a supply of water or light to portions of the city not previously supplied shall be made by the said commissioners so created, they shall make out a full statement of the number of feet of main pipes laid or extended through any of the streets of the city in which main pipes were not laid before the said extension, and shall file the same in the department; and it shall be the duty of the clerk of said department, forthwith, on receipt of said statement, to make out a list of all owners of houses, lots and buildings on each side of the street through which said pipes are extended, and to charge said owners, and each of them, for each and every house, lot or building so situated in said streets, at such rate per foot as the city councils may by ordinance fix, for said mains extending along the front of their respective houses, lots and buildings: *Provided*, That nothing herein contained shall be construed to prevent the councils from providing for the payment of water and gas pipes by the city.

Collection of frontage water and light tax.

Expense of laying pipes in streets.

520. Said charge shall be called the frontage water tax, or lighting tax, as the case may be, and shall be collected and recovered in the manner provided by this act for the recovery of municipal claims. And whenever any pipes for the conveyance of water or light shall be laid in any of the streets or highways within such city, the owners of the ground in front of which the same shall be laid shall pay for the expense thereof such sum for each foot of the front of their ground upon such street as the city council may by ordinance direct: *Provided*, That in

all corner lots an allowance shall be made of one-third the length of their front, but such allowance shall be always and only on the streets or highway having the longest front, and in case both fronts are of equal dimensions the allowance shall be made in the street in which the pipes shall be last laid, but in no case shall the allowance exceed sixty feet on any corner lot: *And provided further*, That when a corner lot shall have erected upon it two or more separate tenements, there shall only be an allowance made equal to one-third of the depth of the corner tenement and the yard adjoining: *And provided also*, That the provisions of this and the foregoing section shall not apply to any lot or piece of ground in such city upon which there may be a supply of water or gas obtained from any other source whatever; but if at any time the owner of such lot or piece of ground shall desire to obtain a supply of water or gas from the works of such city, then and in that case, the provisions of this section shall first be complied with.

521. The said commissioners so created shall have power, by and with the approval of councils, to fix the water and lighting rates, and the quantity to be used, and for that purpose they shall, on the first Monday of March in each year, establish the rates for the succeeding year, which rates shall be submitted by them to councils for their approval, and when approved, such rates shall not be changed for and during the year, but if not approved, the existing rates shall continue until modified by the commissioners with the approval of councils.

522. The city councils shall provide by ordinance for the collection of all the lighting and water rates that may accrue from time to time, to the said city, for the use of the water or light, fixing the time when such rates shall be payable, and the penalties for non-payment thereof; and such rates shall be charged to the respective owners of the real estate on which such water or light is used, and if the same shall not be paid in accordance with the provisions of such ordinance, claims for the amounts due shall be registered in the city lien docket in the same manner as is herein provided in the case of unpaid city taxes on real estate, with the like force and effect as to the lien thereof.

523. The said commissioners created as aforesaid shall, annually, at a stated meeting of councils in the month of January, report to said councils a full statement of all the

repairs, alterations, re-constructions, new constructions, expenditures and everything relating to the management and cost to the city of maintaining the said works. The treasurer of the city shall keep his accounts in such a manner as to show in his monthly report, distinctly and separately, the entire amount of revenue realized during each month from the water and lighting departments of said city respectively; and the revenues derived from the said water and lighting departments shall be applied exclusively to the purposes of said departments respectively, and the surplus, if any, to the reduction of the debt thereof.

524. The city councils shall pass such ordinances, rules and regulations as may be necessary for carrying into effect the provisions of this article, not inconsistent with this act, and may impose fines and penalties for the violation of such ordinances, rules and regulations, recoverable in the manner hereinbefore provided for the recovery of fines and penalties for the violation of other city ordinances, and subject to the limitation as to the amount thereof.

WATER COMPANIES AUTHORIZED TO CONDEMN RIGHTS AND PROPERTY.

525. The ninth paragraph of the second class, title corporations for profit, of the second section of the act, entitled "An act to provide for the incorporation and regulation of certain corporations," approved April twenty-ninth, one thousand eight hundred and seventy-four which reads as follows:

Paragraph 9, second clause, section 2, act of April 29, 1874, cited for amendment.

"IX. The supply of water to the public," shall be amended so as to read as follows:

IX. The supply of water to the public, or the supply, storage or transportation of water and water power for commercial and manufacturing purposes.

Amendment.

526. That clause two, of section thirty-four, of said act of April twenty-nine, one thousand eight hundred and seventy-four, which reads as follows:

Clause 2, section 34, same act cited for amendment.

"Where such company shall be incorporated for the supply of water, they shall have power to provide, erect and maintain all works and machinery necessary or proper for raising and introducing into the town, borough, city or district where they may be located, a sufficient supply of pure water, and for that purpose may provide, erect and maintain all proper buildings, cisterns, reservoirs, pipes and conduits, for the reception and conveyance of water; and they are authorized and empowered by themselves, their agents, engineers and workmen, and with their tools, carts, wagons, beasts of draught or burden, to enter upon such lands and enclosures, streets, lanes and alleys, roads, highways and bridges, as may be necessary to occupy, or obtain materials for construction of said works, and to occupy, ditch and lay pipes through the same, and the same from time to time to repair, subject to such regulations in regard to streets, roads, lanes and other highways, as is provided in the foregoing section for gas companies; and if any injury be done to private property, the said company shall make compensation therefor in the manner provided in the forty-first section of this act," shall be and the same is hereby amended so as to read as follows:

Amendment.

Where such companies shall be incorporated for the supply of water to the public, or for storing and transportation or supply of water and water power for commercial and manufacturing purposes, they shall have power to provide, erect and maintain all works and machinery necessary or proper for raising and introducing into the town, borough, city or district where they may be located a sufficient supply of water, or water and water power as aforesaid, and for that purpose may provide, erect and maintain all proper buildings, cisterns, reservoirs, pipes and conduits, for the reception and conveyance of water, or water power, and it shall have power to appropriate so much of the water from the rivers, creeks, canal water-rights and easements, within or without the limits of the city, borough or place in which said company may by its charter be located, as may be necessary for its purposes, and all damage done thereby shall be ascertained, recovered and paid as provided for in the forty-first section of the act to which this is a supplement; and it is further authorized and empowered by itself, its agents, engineers and workmen, and with its and their tools, carts, wagons, beasts of draught or burden, to enter upon such lands and enclosures, streets, lanes, alleys, roads and highways and bridges, as may be necessary to occupy or to obtain materials for the construction of said works, and to occupy, ditch and lay pipes through the same, and the same from time to time to repair, subject to such regulations in regard to streets, roads, lanes and other highways and impairing the free use thereof as little as possible, and subject to such regulations as the councils of said borough, town, city or district may adopt in regard to grades or for the protection and convenience of public travel over the same, and if any injury be done to private property the said company shall make compensation therefor in the manner provided for in the forty-first section of this act: *Provided*, That this act shall not apply to private springs or private water supplies.

PERMITS FOR THE EMPTYING OR REMOVING OF THE CONTENTS OF PRIVY WELLS OR CESSPOOLS, IN CITIES OF THE SECOND CLASS.

Fee for permit.

527. From and after the passage of this act, the price or fee for a permit to clean or empty any privy well or cesspool, in any city of the second class in this commonwealth, and to remove and carry away the contents thereof, shall be fifty cents; the same to be paid by the party applying for said permit to the bureau of health of said cities at the time the application for said permit is made.

To be paid to the bureau of health.

Repeal.

SECTION 2. All acts or parts of acts inconsistent herewith be and the same are hereby repealed.

V. THE PRACTICE OF VETERINARY MEDICINE AND SURGERY.

Practitioners of veterinary medicine or surgery must be graduates of legally chartered veterinary colleges.

528. Every person who shall assume or use, or cause to be used, any title pertaining to the practice of veterinary medicine or surgery, or any of the branches of veterinary medicine or surgery, shall be a graduate of a legally chartered veterinary college or university having the power or authority to confer the degree of veterinary surgeon or analogous title, except as provided for in section two. And such practitioner shall be required to register in the book kept for that purpose, in the office of the prothonotary of the county in which he resides.

To register in prothonotary's office.

Practitioners of five years' standing allowed to continue.

529. Any person who has assumed the title of veterinary surgeon or analogous title in this commonwealth for the five years preceding the passage of this act, without being entitled to the degree of veterinary surgeon or analogous title, shall be allowed to continue the use of the title; but such person shall appear before the prothonotary of the county in which he resides and make affidavit of that fact, he shall then be recorded as an existing practitioner.

To make affidavit and register.

530. The prothonotary shall purchase a book of suitable size, to be known as the veterinary medical register of the county, and shall set apart one full page for the registration of each practitioner; and when any practitioner shall die or remove from the county, the prothonotary shall make a note of the same, and shall perform such other duties as are required by this act.

Prothonotary to provide veterinary medical register.

To note deaths and removals

531. Every practitioner who shall be admitted to register shall pay to the prothonotary the sum of one dollar, which sum shall be compensation in full for registration. The prothonotary shall give a receipt for the same, and such registration shall take place within six months from the passage of this act.

Fees.

Prothonotary to give receipt.

Registry to be made within six months

532. Nothing in this act shall be so construed as to prevent any veterinary surgeon (if legally qualified to use the title) from using the title veterinary surgeon or analogous title in this commonwealth; but if such veterinary surgeon opens an office, or uses the title for the transaction of business, he shall be deemed a sojourner, and shall conform to the requirements of this act.

Who are subject to this act

533. Any person who may desire to commence the practice of veterinary surgery or medicine, or any of its branches, in this state after the passage of this act, and who holds a veterinary diploma issued or purporting to have been issued by any veterinary college or university in this state, another state or foreign country, shall make affidavit before the prothonotary that his diploma has been regularly issued by a legally chartered veterinary college or university, after which such person will be allowed to register, as provided for in this act.

Practitioners holding diplomas issued outside of this state to make affidavit and register.

534. Any person who shall present to a prothonotary a veterinary diploma which has been obtained fraudulently, or which is in whole or in part a forgery, or shall make affidavit to any false statement intended to be filed or registered, or shall use the title of veterinary surgeon or analogous title, without conforming to the requirements of this act, or shall otherwise violate or neglect to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction shall be punished, for each and every offence, by a fine not exceeding one hundred dollars.

Violation of this act declared to be a misdemeanor.

Penalty.

CONTAGIOUS DISEASES AMONG DOMESTIC ANIMALS.

535. When it shall be brought to the notice of the sectary of the state board of agriculture that any conta-

Duties and powers of secretary of state board of agriculture.

Quarantine.

Rules and regulations.

gious disease, not otherwise provided for by law, prevails among domestic animals, he may take such measures to prevent its spread as may be deemed expedient, and for this purpose shall have power to place infected animals, herds, buildings and farms in quarantine, and to prevent the movement of animals or objects likely to convey the contagion, except upon proper permits, and, with the consent and approval of the Governer, to make such rules and regulations for the government of such quarantine as may be deemed necessary to effectively carry out the purpose of this act.

Violation of this act a misdemeanor.

Penalty.

536. That any person or persons who shall wilfully or intentionally interfere with any officer or officers, duly authorized to carry out the provisions of this act, or who shall wilfully or intentionally violate the provisions of the quarantine authorized by section one of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be liable to an imprisonment not exceeding three months, or a fine not exceeding one hundred dollars, or both, at the discretion of the court.

Appraisement of and compensation for animals killed.

Certificate of value

Certificates not to exceed $2,500 in one year

537. That when it shall be necessary or expedient to kill any animal or animals to prevent the spread of contagious disease, it or they shall first be appraised by sworn appraisers, who shall have due consideration for the actual condition of the animal or animals, at the time of appraisement, and the owner or owners shall be entitled to receive from the secretary of the state board of agriculture a certificate of value, which may be paid from current appropriations or by a subsequent appropriation by the legislature: *Provided*, That the amount of such certificates, issued in any one year, shall not exceed the sum of twenty-five hundred dollars.

Co-operation with officers of National Government.

538. That for the economical eradication of contagious diseases of domestic animals, the secretary of the state board of agriculture shall have power, with the consent and approval of the Governor, to arrange for and carry into effect, terms of co-operation with the proper officers of the National government.

Repeal.

539. That all acts or parts of acts inconsistent herewith are hereby repealed.

VI. PROTECTION OF EMPLOYES—WOMEN—CHILDREN—FIRE-ESCAPES.

THE SAFETY OF WOMEN AND CHILDREN IN MERCANTILE INDUSTRIES AND MANUFACTURING ESTABLISHMENTS.

Employment of minors.

540. No minor shall be employed at labor in factories or any manufacturing establishment or mercantile industry in this state, for a longer period than sixty hours in any week, unless for the purpose of making necessary repairs.

Children under 12 years of age not to be employed.

Register to be kept.

Affidavit of parent.

Affidavit of child.

541. No child under twelve years of age shall be employed in any factory, manufacturing or mercantile establishment within this state. It shall be the duty of every person so employing children to keep a register, in which shall be recorded the name, birth-place, age and place of residence of every person so employed by him under the age of sixteen years. And it shall be unlawful for any factory, manufacturing or mercantile establishment to hire or employ any child under the age of sixteen years, without there is first provided and placed on file an affidavit made by the parent or guardian, stating the age, date and place of birth of said child. If said child have no parent or guardian then such affidavit shall be made by the child, which affidavit shall be kept on file by the employer, and which said register and affidavit shall be produced for inspection on demand by the inspector or any of the deputies appointed under this act.

Notice as to hours of employment, etc., to be posted.

542. Every person, firm or corporation employing women and children or either in any factory, manufacturing or mercantile establishment, shall post and keep posted in a conspicuous place in every room where such help is employed, a printed notice stating the number of hours per day for each day of the week required of such persons, and in every room where children under sixteen years of age are employed a list of their names with their age.

What shall be deemed a factory, etc.

543. No person, firm or corporation employing less than ten persons who are women or children shall be deemed a factory, manufacturing or mercantile establishment within the meaning of this act.

Governor to appoint a factory inspector.

544. The Governor shall, immediately after the passage of this act, appoint, with the advice and consent of the Senate, a factory inspector, at a salary of fifteen hundred dollars per year, whose term of office shall be three

His duties.

years. The said inspector shall be empowered to visit and inspect, at all reasonable hours and as often as practicable, the factories, work shops and other establishments in the state employing women or children, where the manufacture of goods is carried on, and to report to the bureau of labor statistics of this state, on or before the thirteenth day of November of each year, the name of factory, the number of such hands employed and the number of hours work performed each week. It shall also be the duties of said inspector to enforce the provisions of this act and to prosecute all violations of the same before any magistrate or any court of competent jurisdiction in the state.

His expenses to be paid by the state.

545. All necessary expenses incurred by the said inspector in the discharge of his duty shall be paid from the funds of the state, upon the presentation of proper vouchers for the same: *Provided*, That not more than twenty-five hundred dollars shall be expended by him therefor in any one year.

Not to exceed $2.500 a year.

Well-holes to be secured and trap doors applied thereto.

546. It shall be the duty of the owner, agent or lessee of any such factory, manufacturing or mercantile establishment, where hoisting-shafts or well-holes are used, to cause the same to be properly and substantially enclosed or secured if in the opinion of the inspector it is necessary to protect the life or limbs of those employed in such establishments. It shall be the duty of the owners, agent or lessee to provide or cause to be provided such proper trap or automatic doors, so fastened in or at all elevator ways as to form a substantial surface when closed and so constructed as to open and close by action of the elevator in its passage either ascending or descending.

Automatic shifters to be used.

547. It shall also be the duty of the owner of such factory, mercantile industry or manufacturing establishment, or his agent, superintendent or other person in charge of the same, to furnish and supply or cause to be furnished and supplied, in the discretion of the inspector, where dangerous machinery is in use, automatic shifters or other mechanical contrivance for the purpose of throwing on or off belts or pulleys. And no minor under sixteen years of age shall be allowed to clean machinery while in motion. All gearing and belting shall be provided with proper safe-guard.

Cleaning machinery in motion.

Other safeguards

Fatal or serious injury to be reported.

548. It shall be the duty of the owner or superintendent to report, in writing, to the factory inspector all

fatal accidents or serious injury done to any person employed in such factory, within forty-eight hours, stating as fully as possible the cause of such injury.

Separate wash rooms and water closets for female employes.

549. A suitable and proper wash-room and water-closets shall be provided for females where employed, and the water-closets used by females shall be separate and apart from those used by males, and shall be properly screened and ventilated and at all times kept in a clean condition.

Forty-five minutes time for noon meal.

550. Not less than forty-five minutes shall be allowed for the noon-day meal in any manufacturing establishment in this state. The factory inspector, his assistant or any of his deputies shall have power to issue permits in special cases, allowing a shorter meal time at noon, and such permit must be conspicuously posted in the main entrance of the establishment, and such permit may be revoked at any time the inspector deems necessary, and shall only be given where good causes can be shown.

Exceptions.

Changes and safeguards which must be made within sixty days after notice from inspector.

551. That if the inspector of factories find that the heating, lighting, ventilation or sanitary arrangement of any shop or factory is such as to be injurious to the health of persons employed therein, or that the means of egress in case of fire or other disaster is not sufficient or in accordance with all the requirements of the law, or that the belting, shafting, gearing, elevators, drums and machinery in shops and factories are located so as to be dangerous to employés and not sufficiently guarded, or that the vats, pans or structures filled with molten metal or hot liquid are not surrounded with proper safeguards for preventing accident or injury to those employed at or near them, he shall notify the proprietor of such factory or workshop to make the alterations or additions necessary within sixty days, and if such alterations or additions are not made within sixty days from the date of such notice, or within such time as said alterations can be made with proper diligence upon the part of said proprietors, said proprietors or agents shall be deemed guilty of violating the provisions of this act.

The factory inspector may appoint deputies.

552. The factory inspector now or hereafter appointed under or by virtue of the provisions of this law, is hereby authorized to appoint such number of persons as in his judgment may be necessary, not exceeding six, one-half of whom shall be females, who shall be known as deputy factory inspectors, either or any one of whom may be appointed to act as clerk in the main office, and whose duties

Their duties.

it shall be to encourage the provisions of this act and of the several acts relating to factories and manufacturing establishments. The powers of said deputies shall be the same as the powers of the factory inspector, subject to the supervision and direction of the factory inspector.

Expenses of deputies.

553. The traveling expenses of each of said deputies shall be approved by the inspector and audited by the Auditor General of the state before payment, and said deputy inspectors shall have an annual salary of one thousand dollars, to be paid monthly by the treasurer of the state out of any moneys not otherwise appropriated.

Their salaries.

State may be districted.

554. Said factory inspector shall have power to divide the state into districts and to assign one of said deputies to each district, and may transfer any of the deputies to other districts in case the best interests of the state require it. The inspector shall have the power of removing any of the deputy inspectors at any time.

Control of factory inspector over deputies.

Inspector's office.

555. An office shall be furnished in the capitol as soon as practicable, which shall be set apart for the use of the factory inspector. The factory inspector and his deputies shall have the same power to administer oaths or affirmations as is now given to notaries public, in cases where persons desire to verify documents connected with the proper enforcement of this act.

He and his deputies may administer oaths.

Violation of this act a misdemeanor.

556. Any person who violates any of the provisions of this act, or who suffers or permits any child or females to be employed in violation of its provisions, shall be deemed guilty of a misdemeanor and on conviction shall be punished by a fine of not more than five hundred dollars.

Penalty.

Copy of this act to be posted.

557. A printed copy of this act shall be posted by the inspector in each work-room of every factory, manufacturing or mercantile house where persons are employed who are affected by the provisions of this act.

Repeal.

558. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

BETTER SECURITY OF LIFE AND LIMB IN CASES OF FIRE IN HOTELS AND OTHER BUILDINGS.

559. That portion of section one of the act, approved the third day of June, Anno Domini one thousand eight hundred and eighty-five, which reads as follows:

Section 1, act of June 1, 1887, cited for amendment.

"SECTION 1. That in addition to the means of escape required in section one of the act to which this is a supplement, it shall be the duty of the owner or owners, in fee or for life, of every building constructed more than two stories high and used or intended to be used as a hotel, factory, manufactory, workshop, tenement house, school, seminary, college, academy, hospital, asylum, hall or place of amusement, and of the trustee or trustees of every estate, association, society, college, academy, hospital or asylum, owning or using any building constructed more than two stories high, and used or intended to be used for any of the said purposes, and of the board of education, or board of school directors, having charge of any building constructed more than two stories high, and used or intended to be used as a public school, to provide and cause to be securely affixed to a bolt through the wall over the window-head inside of at least one window, in each room, on the third floor, and in each room on each higher floor of every such building, a chain at least ten feet in length with a rope at least one inch in diameter securely attached thereto of sufficient length to extend to the ground, or such other appliance as may be approved by the board of fire commissioners of any city or county having a board of fire commissioners, or by the county commissioners of any county where there is no board of fire commissioners: *Provided however*, That when the third floor, or any higher floor, of any such building is not subdivided into rooms then at least six windows on each of such floors shall be provided with such chains and ropes, or such other appliances as may be approved by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist: *And provided further*, That whenever any room on the third floor, or on any higher floor, of any such building shall contain more than three windows, then at least one window out of every three windows, in every such room, shall be provided with such chain and rope or such other appliance as may be approved by any board of fire commissioners, or by the county commissioners of any county having no board of fire commissioners. And each of such ropes shall be coiled and kept in an unlocked box in an unobstructed place, near the inside sill of the window to which such rope is attached. And in all hotels, factories, manufactories, workshops, schools, seminaries, colleges, hospitals, asylums, halls or places of amusements, or other places mentioned in this act, the hallways and stairways shall be properly lighted at night, and at the head and foot of each flight of stairs, and at the intersection of all hallways with main corridors, shall be kept during the night a red light; and one or more proper alarms or gongs capable of being heard throughout the building shall always remain easy of access and ready for use in each of said buildings to give notice to the inmates in case of fire. And every keeper of such hotel, factory, manufactory, workshop, school, seminary, college, hospital, asylum, hall or place of amusement, shall keep posted in a conspicuous place in every sleeping room a notice descriptive of such means of escape. And the board of fire commissioners, and the county commissioners of any county having no board of fire commissioners, shall have the right to designate the location of the chains and ropes or such other appliances in conformity with this act to be attached to any building under the provisions of this act, and shall grant certificates of approval to every person, firm, corporation, trustee, board of education, and board of school directors, complying with the requirements of this act, which certificate shall relieve the party or parties to whom the same shall be issued from the liabilities, fines, damages and imprisonment imposed by this act," shall be amended so as to read as follows:

Certain buildings to be provided with means of escape.

SECTION 1. That in addition to the means of escape required in section one of the act to which this is a supplement, it shall be the duty of the owner or owners, in fee or for life, of every building constructed more than two stories high and used or intended to be used as a hotel, factory, manufactory, workshop, tenement house, school, seminary, college, academy, hospital, asylum, hall or place of amusement, and of the trustee or trustees of every estate, association, society, college, academy, hospital or asylum, owning or using any building constructed more than two stories high and used or intended to be used, for any of said purposes, and of the board of education or board of school directors, having charge of any building constructed more than two stories high and used or intended to be used as a public school, to provide and cause to be securely affixed to a bolt through the wall over the window-head, inside of at least one window in each room on the third floor, and in each room on each higher floor, of every such building, a chain at least ten feet in length, with a rope at least one inch in diameter, securely attached thereto, of sufficient length to extend to the ground, or such other appliances as may be approved by the board of fire commissioners of any city or

Where to be located and how secured.

Description of appliance.

To be approved by fire commissioners, etc.

county having a board of fire commissioners, or by the county commissioners of any county where there is no board of fire commissioners: *Provided however*, That when the third floor or any higher floor of any such building is not subdivided into rooms, then at least six windows of each of such floors shall be provided with such chains and ropes, or such other appliances as may be approved by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist:

In case of third or higher floors.

And provided further, That whenever any room on the third floor, or on any higher floor of any such building, shall contain more than three windows, then at least one window out of every three windows in every such room, shall be provided with such chain and rope, or other such appliance as may be approved by any board of fire commissioners, or by the county commissioners of any county having no board of fire commissioners.

How and where rope, etc., to be kept.

And each of such ropes shall be coiled and kept in an unlocked box, in an unobstructed place, near the inside of sill of the window to which such rope is attached.

Lights for stairs and hallways, and alarms to be provided.

And in all hotels, factories, manufactories, workshops, schools, seminaries, colleges, hospitals, asylums, halls, or places of amusement or other places mentioned in this act, the hallways and stairways shall be promptly lighted at night, and at the head and foot of each flight of stairs, and at the intersection of all hallways with main corridors, shall be kept during the night, a red light, and one or more proper alarms or gongs, capable of being heard throughout the building, shall always remain easy of access and ready for use in each of said buildings, to give notice to the inmates in case of fire.

Notices as to means of escape in sleeping rooms.

And every keeper of such hotel, factory, manufactory, workshop, school, seminary, college, hospital, asylum, hall or place of amusement, shall keep posted in a conspicuous place in every sleeping room, a notice descriptive of such means of escape.

Commissioners to designate location for appliances.

And the board of fire commissioners, and the county commissioners of any county having no board of fire commissioners, shall have the right to designate the location of the chains and ropes or other such appliance, in conformity with this act, to be attached to any building under the provisions of this act, and shall grant certificates of approval to every person, firm, corporation, trustees, board of education and board of school directors complying with the requirements of this act; which certificates shall relieve the party

Certificates of approval.

or parties to whom the same shall be issued from the liabilities, fines, damages and imprisonment imposed by this act. And the board of fire commissioners, and the county commissioners of any county having no board of fire commissioners, may direct that the foregoing requirements, in so far as they relate to the placing and keeping of chains and ropes in hospitals and asylums, may be dispensed with whenever in their judgment the same would be unnecessary.

Chains and ropes may be dispensed with in hospitals and asylums.

THE SALE OF CIGARETTES TO PERSONS UNDER THE AGE OF SIXTEEN YEARS.

Selling cigarettes to persons under sixteen years of age declared a misdemeanor.
Penalty.

560. If any person or persons shall sell cigarettes to any person or persons under the age of sixteen years, he or she so offending, shall be guilty of a misdemeanor, and upon conviction thereof shall be sentenced to pay a fine of not more than three hundred dollars.

VII. REGISTRATION OF PHARMACISTS—SALE OF PROVISIONS.

Pharmacists who failed to register under former act may do so within ninety days.

561. Any person who was entitled to registration as a pharmacist, as provided in section three of the act, entitled "An act to regulate the practice of pharmacy and sale of poisons, and to prevent adulterations in drugs and medicinal preparations, in the State of Pennsylvania," approved May twenty-fourth, one thousand eight hundred and eighty-seven, and who failed to apply for registration within the ninety days as provided in said act, may make such application at any time within ninety days after the passage of this act, with the same force and effect as if such application had been made within the ninety days provided in the act of May twenty-fourth, one thousand eight hundred and eighty-seven.

SALES OF PROVISIONS BY DESCRIPTION.

Implied contract as to quality of goods.

562. That in every sale of green, salted, pickled or smoked meats, lard and other articles of merchandise, used wholly or in part for food, said goods or merchandise shall correspond in kind and quality with the description given, either orally or in writing, by the vendor; and in every sale of such goods or merchandise, unless the parties shall agree otherwise, there shall be an implied contract or understanding that the goods or merchandise are sound and fit for household consumption.

Repeal.

563. All acts or parts of acts inconsistent herewith be and the same are hereby repealed.

VIII. COAL MINES.

THE RECOVERY OF THE BODIES OF WORKMEN ENCLOSED, BURIED OR ENTOMBED IN COAL MINES.

Duty of court.

564. Whenever any workman or workmen shall heretofore have been, or shall hereafter be, enclosed, entombed or buried in any coal mine in this commonwealth, it shall be the duty of the court, sitting in equity, in the county wherein such workman or workmen are enclosed, entombed or buried, upon the petition of any relatives of those enclosed, entombed or buried, to make an order of court for the petitioner to take testimony, in order that the court may ascertain whether such workman or workmen, or the body or bodies of such workman or workmen, can be recovered or taken out of said mine. If, after full hearing, it shall appear to the court that such undertaking is feasible or practicable, said court may forthwith issue a peremptory mandamus to the owner or owners, lessee or lessees, operator or operators of such coal company, to forthwith proceed to work for and recover and take out the body or bodies of such workman or workmen, and said court shall have full authority to enforce such peremptory mandamus in the manner already provided for the enforcement of such process.

Mandamus to owner, etc., of mines, for recovery of bodies.

IX. THE STATE WEATHER SERVICE.

$5,000 appropriated.

565. The sum of five thousand dollars shall be and the same is hereby appropriated to be expended according to the provisions of an act, entitled "An act to establish a state weather service of this commonwealth," approved the thirteenth day of May, Anno Domini one thousand eight hundred and eighty-seven: *Provided*, That in order to carry into effect more completely the purposes of said act, the necessary traveling expenses of the assistant in charge, which may be designated and approved by the Franklin Institute, shall be paid out of the sum hereby appropriated: *And provided further*, That the clerical expenses chargeable upon this appropriation, shall be limited to the cost of such clerical work as may be necessary in keeping up the correspondence and compiling records and reports for publication. The amounts to be paid and work done shall be such as may be designated and approved by the Franklin Institute. The said appropriation to be paid on the warrant of the Auditor Gen-

Traveling expenses of assistant in charge.

Clerical expenses.

Payments to be approved by Franklin Institute.

Payable on warrant of Auditor General.

Itemized statement.

eral on a settlement made by him and the State Treasurer, but no warrant shall be drawn on settlement made until the directors or managers of said institution shall have made, under oath, to the Auditor General, a report containing an itemized statement of the expenses of said institution during the previous quarter and the same is approved by him and the State Treasurer, nor until the treasurer shall have sufficient money in the treasury not otherwise appropriated to pay the quarterly instalments due said institution.

APPENDIX M.

OCCASIONAL CIRCULARS IN CYCLOSTYLE.

1. To Prothonotaries in Pennsylvania.
2. To Health Officers and Health Boards in Pennsylvania.
3. To all Physicians in Pennsylvania.
4. To all Physicians in Pennsylvania.
5. To Councils, Boards of Health and Undertakers in Pennsylvania.
6. To Physicians in Pennsylvania and the Press.
7. To Newspapers in Pennsylvania.

1—CIRCULAR TO PROTHONOTARIES IN PENNSYLVANIA DRAWING THEIR ATTENTION TO THE DUPLICATION OF NAMES IN THE RETURNS OF PHYSICIANS REGISTERED.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, *January 18, 1890.*

. . . . *Prothonotary,*
. . . . *County, Pa.:*

DEAR SIR: In the returns of physicians made during the past summer and fall there has been a considerable number of duplications. Will you, therefore, do me the favor to make a distinct note upon your register indicating the date up to which returns have been made to the state board of health, in order that this mistake may be avoided in the future?

Yours very respectfully,
BENJAMIN LEE,
Superintendent of Vital Statistics.

2—CIRCULAR TO HEALTH OFFICERS AND HEALTH BOARDS IN PENNSYLVANIA, DRAWING THEIR ATTENTION TO THE FACT THAT SMALL-POX IS PREVALENT IN CERTAIN PARTS OF CONNECTICUT.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *February 20, 1890.*

To the Health Officer of . . . . . . :

I have received information from the secretary of the State Board of Health of Connecticut that small-pox now exists at five different points in the central portion of that state. The infected towns are Windsor Locks, Woodstock, Waterbury, East Windsor and Meriden. Many persons have been exposed to the contagion in consequence of the fact that individuals suffering from the disease have been allowed to travel in public conveyances. It is, therefore, recommended that all persons who may have occasion to visit the region indicated take the precaution to be vaccinated before leaving home.

The disease has also been officially reported during the past two weeks from the States of Ohio, Michigan, Illinois and Massachusetts. Health officers in Pennsylvania, and especially in the western part of the state, should, therefore, be on the look-out for sporadic cases.

BENJAMIN LEE,
Secretary State Board of Health.

3—CIRCULAR TO ALL PHYSICIANS IN PENNSYLVANIA REQUESTING INFORMATION IN REGARD TO AN EPIDEMIC OF INFLUENZA.

STATE BOARD OF HEALTH OF PENNSYLVANIA,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *March 10, 1890.*

DEAR DOCTOR: I am desirous to obtain reliable statistics in regard to the recent pan-demic of influenza as observed in this state. Will you, therefore, kindly furnish the information called for below, by filling up the blanks from the date in your visiting list or note book and returning the sheet to me as early as practicable.

Yours very respectfully,
(Signed) BENJAMIN LEE, M. D.,
Superintendent of Vital Statistics.

. . . .

Residence, ... County, ...

Date of first case, ...

Number of cases, ... Adults, ... Children, ...

Predominant type (nervous), ...

(catarrhal), ...

(inflammatory), ...

Number of deaths (directly caused), ...

(indirectly caused), ...

Immediate cause of death, ...

Bronchitis, ... Adults, ... Children, ...

Pneumonia, ... " . . . . . . " . . . . .

Phthisis, ... " . . . . . . " . . . . .

Nervous affections, . . . " . . . . . . " . . . . .

4—CIRCULAR TO ALL PHYSICIANS IN PENNSYLVANIA REQUESTING INFORMATION IN REGARD TO THE EFFECT OF TOBACCO SMOKING IN PROMOTING OR RETARDING THE DEVELOPMENT OF TUBERCULOSIS OR CONSUMPTION.

STATE BOARD OF HEALTH,
EXECUTIVE OFFICE,
PHILADELPHIA, ... *189* .

DEAR DOCTOR: The state board of health is desirous of obtaining authentic information as regards the effect of tobacco smoking, either in promoting or retarding the development of pulmonary tuberculosis or consumption. It has been stated that inveterate smokers are, to a great extent, exempt from the disease. If this is true the fact ought to be made widely known. If it has no foundation it ought to be authoritatively contradicted. The board has, therefore, instructed me to address you this communication, asking if you will kindly forward, at as early a date as convenient, the results of your own observation and experience in regard to this subject.

Yours very truly,
(Signed) BENJAMIN LEE,
Secretary.

5—CIRCULAR TO COUNCILS, BOARDS OF HEALTH AND UNDERTAKERS IN PENNSYLVANIA IN ANSWER TO THEIR ENQUIRIES RESPECTING THE FURNISHING OF DISINTERMENT AND TRANSPORTATION PERMITS.

STATE BOARD OF HEALTH OF PENNSYLVANIA,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *March 10, 1890.*

DEAR SIR: Your favor of inquiry, with regard to the furnishing of blanks for permits for the disinterment and transportation of dead bodies, is received. I would say, in reply, that the board does not expect to provide these permits free of expense. An arrangement has been made, however, with Mr. E. K. Meyers, state printer, Harrisburg, by which councils or boards of health can have them printed, uniform with the sample, at a moderate expense. By applying to the department named you can obtain all necessary details.

Yours very respectfully,
(Signed) BENJAMIN LEE, M. D.,
Secretary.

6—CIRCULAR TO NEWSPAPERS IN PENNSYLVANIA, INFORMING ALL PHYSICIANS IN PENNSYLVANIA THAT THEY NEED NOT HESITATE TO FURNISH FULL INFORMATION TO CENSUS ENUMERATORS IN REGARD TO THEIR PATIENTS.

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH,
EXECUTIVE OFFICE,
PHILADELPHIA, *June 7, 1890.*

To Physicians in Pennsylvania:

An opportunity is afforded, in connection with the taking of the census by the United States government, of obtaining statistical information which cannot fail to be of extreme value to the state as regards the physically defective classes which compose a portion of its population. The state board of health, to which has been confided the duty of superintending the collection of vital statistics in this commonwealth, is desirous that these returns should be as full as possible. The medical profession, of all others, should be the first to appreciate the importance of such information. It has been found, however, in conversation with physicians, that many of them entertain the apprehension that the information which they thus impart may be used in some manner detrimental to the patient or individual to whom it refers. In order to remove any such obstacle to obtaining complete returns, communications were addressed to the Hon. Robt. P. Porter, superintendent of census, and Dr. J. S. Billings, surgeon United States army, in charge of vital statistics and statistics of special classes, asking for a guarantee in addition to that already given, "that all information furnished on their schedules would be considered and treated as strictly confidential, no names being published." To this communication the following reply has been received.

(Copy of letter from Hon. Robt. P. Porter, superintendent of census, of Washington, D. C., stating that physicians in Pennsylvania may be informed that their returns, as regards patients, will be treated as strictly confidential.)

There can, therefore, be no ground for hesitancy on the part of the profession, on the score of professional delicacy, to furnish the information called for in every particular.

Respectfully,
(Signed) BENJAMIN LEE, M. D.,
Superintendent Vital Statistics of the Commonwealth of Pennsylvania.

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7. Circular to newspapers in Pennsylvania, asking their co-operation in disseminating the information contained in the board's precautionary circulars.

APPENDIX N.

CONSTITUTION, BY-LAWS, REGULATIONS AND ORGANIZATION OF THE BOARD.

CONSTITUTION.

The constitution of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania is the act of Legislature establishing the Board, approved June 3, 1885, of which the following is the correct text:

AN ACT

To establish a state board of health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth.

Manner of appointment.

Number of members.

Term of service.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the some,* That the Governor, by and with the advice and consent of the Senate, shall appoint six persons, a majority of whom shall be physicians of good standing, graduates of regularly chartered and legally constituted medical colleges, and of not less than ten years' experience in the practice of their profession, and one of whom shall be a civil engineer, who, together with the secretary, the mode of whose appointment is hereinafter provided for, shall constitute and be designated as the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Of the six persons first appointed, two shall serve for two years, two for four years, and two for six years, from the first day of July next following their confirmation; and the Governor shall thereafter biennially appoint, by and with the advice and consent of the Senate, two persons, of the same professions as those whose terms of office have just expired, to be members of said board, to hold their offices for six years from the first day of July next following their confirmation, and until their successors are appointed, excepting the secretary, who shall continue in office as hereinafter provided; but any member may be re-appointed. Any vacancy occurring in said board during a recess of the legislature shall be filled by the Governor until the next regular session of the same.

Manner of organization.

SECTION 2. As soon as possible after the appointment of the first six persons as aforesaid, they shall meet in the office of the secretary of commonwealth, and shall proceed, under the direction of the latter offices, to determine by lot which of them shall serve for the respective terms of two, four and six years. Before entering upon the duties of the office they shall take the oath prescribed for state officers by the constitution of the state, and shall file the same in the office of the secretary of the commonwealth, who, upon receiving the said oath of office, shall issue to each a certificate of appointment for his respective term of office determined as aforesaid; upon receiving which they shall possess and exercise the powers and perform the duties of said board as defined in this act. Immediately after having taken the oath of office they shall organize by electing one of their number to be president, and by appointing a proper person, who shall be a physician of good standing, of not less than ten years' professional experience, and a graduate of a legally constituted medical college, to be secretary of said board, who shall hold his appointment until removed by the appointment of his successor or otherwise. The board may elect one of its own members secretary, in which case the vacancy thus created shall be filled by the Governor in the same manner as a vacancy caused in any other way. The president shall be elected annually. No member of the board except the secretary shall, as such, receive any salary; but the actual traveling and other expenses of any member, while engaged on the actual duties of the board, shall be allowed and paid on presentation to, and approved by, the Auditor General of an itemized account with vouchers annexed.

Appointment of secretary.

Actual expenses of members to be paid.

Duties of secretary.

SECTION 3. The secretary shall be the executive officer of the board, and shall have all the powers and privileges of a member of said board, except in regard to voting upon matters relating to his own office and duties as secretary. He shall receive an annual salary of two thousand dollars, which shall be paid him in the same manner that salaries of other state officers are paid; and such necessary expenses as the Auditor General shall

Salary of secretary.

audit, on presentation of an itemized account with vouchers annexed and the certificates of the board shall be allowed him.

Time and place of meetings.

SECTION 4. The said board shall meet at least once every six months, and may also hold special meetings as frequently as the proper and efficient discharge of its duties shall require, in the capitol building at Harrisburg (unless otherwise ordered), and the rules and by-laws of the board shall provide for the giving of proper and timely notice of all such meetings to every member of the board. The Secretary of Internal Affairs shall provide and furnish such apartments and stationery as said board may require in the discharge of its duties. A majority of the members of the board shall, at any regular, called or adjourned meeting, organize and constitute a quorum for the transaction of business.

Duties and function of board defined.

SECTION 5. The state board of health and vital statistics shall have the general supervision of the interests of the health and lives of the citizens of the commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations and inquiries respecting the causes of disease, and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, conditions, habits, food, beverages and medicine, on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the legislature, and at such other times as it deems it important, institute sanitary inspections of public institutions or places throughout the state. It shall codify and suggest amendments to the sanitary laws of the commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases.

Powers of board.

SECTION 6. In cities, boroughs, districts and places having no local board of health, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative, the state board of health shall have power and authority to order nuisances, or the cause of any special disease or mortality, to be abated and removed, and to enforce quarantine regulations as said board may direct.

Penalty for violation and neglect.

Any person who shall fail to obey, or shall violate, such order shall, on conviction, be sentenced to pay a fine of not more than one hundred dollars at the discretion of the court.

Functions of board in registration.

SECTION 7. It shall be the duty of the state board of health and vital statistics to have general supervision of the state system of registration of births, marriages and deaths, of prevalent diseases, and of practitioners of medicine and surgery, to prepare the necessary methods, forms and blanks for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the central bureau of vital statistics at the capital of the state. The state board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the state. The secretary of the state board of health and vital statistics shall be the superintendent of registration of vital statistics; as supervised by said board, the clerical duties and safe-keeping of the bureau of vital statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said board shall require in the discharge of such duties.

Secretary of Internal Affairs to provide stationery and apartments.

Local boards of health and institutions to report to board.

SECTION 8. It shall be the duty of all health officers and boards of health in the state to communicate to the said state board of health copies of all their reports and publications, and also such sanitary information as may be requested by said board. And said board is authorized to require reports and information (at such times, and of such facts, and, generally, of such nature and extent as its by-laws or rules may provide) from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants of all places of public resort in the state; but such reports shall only be required concerning matters or particulars in respect of which it may, in its opinion, need information for the proper discharge of its duties.

Scientific investigations.

SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto. But no more than two thousand dollars shall be expended in any one year for such special sanitary service.

Annual report.

SECTION 10. It shall be the duty of said board, on or before the first Monday of December in each year, to make a report, in writing, to the Governor of this state upon the sanitary condition and prospects of the state; and such report shall set forth the action of the said board and its officers and agents, and the names thereof, for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of five thousand dollars in any one year.

Appropriation. SECTION 11. The sum of ten thousand dollars ($10,000) is hereby appropriated from the treasury for the purposes of this act and the expenditures properly incurred by the authority of said board and verified by affidavit, subject, however, to the limitations hereinbefore imposed, and shall be paid by the treasurer upon the warrant of the Auditor General.

SECTION 12. This act shall take effect immediately, and all acts or parts of act inconsistent herewith shall be, and are hereby, repealed.

APPROVED—June 3, 1885. ROBT. E. PATTISON.

AN ACT

To regulate the publication, binding and distribution of the public documents of this commonwealth.

SECTION 1. *Be it enacted, etc.,* That from and after the passage of this act the printing, binding, distribution and number of the several public documents of this commonwealth shall be as follows, to wit:

XIX. Five thousand copies of the annual report of the state board of health and vital statistics be printed annually, four thousand to be bound in muslin and one thousand in paper; seventeen hundred and fifty thereof for the use of the House of Representatives, one thousand for the use of the Senate, seventy-five thereof for the use of the Governor, seventy-five thereof for the State Librarian for distribution and exchange with the states and territories, five hundred thereof for reserve work, and the remainder thereof for exchange and distribution by the state board of health.

APPROVED—The 16th day of April, A. D. 1887.

JAMES A. BEAVER.

AN ACT

To provide for the current expenses of the state board of health and vital statistics for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-nine, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety.

480. The following sums be and are hereby specifically appropriated to defraying the expenses of the state board of health and vital statistics for two years, namely: for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-nine, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety:

$4,000 for salary of secretary, etc.

$6,000 for clerical aid, sundry expenses, and sanitary investigation.

For salary of secretary and executive officer for two years, four thousand dollars. For employment of necessary clerical aid in the office of the board, for postage, telegrams, express charges and incidental office expenses, for traveling and other necessary expenses of the members and secretary of the board, while engaged on the actual duties of the board, and for sanitary inspections, control of epidemics and laboratory investigations and analyses, for two years, six thousand dollars or so much thereof as may be necessary.

Manner of expenditures.

The amounts expended from the above appropriation shall be distributed by the said board in accordance with the requirements of the sanitary service of the commonwealth and with reference to such emergencies as may arise, and shall be settled with the Auditor General and State Treasurer in the usual manner.

To amend an act, entitled "An act to establish a state board of health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth," approved the third day of June, one thousand eight hundred and eighty-five, providing the expenses therefor.

481. That section nine of the act, entitled "An act to establish a state board of health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth," approved the third day of June, one thousand eight hundred and eighty five, which reads as follows:

Section 9, act of June 3, 1885, cited for amendment.

"SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill and to prepare plans and reports relative thereto. But no more than two thousand dollars shall be expended in any one year for such special sanitary service," be amended so as to read as follows:

Amendment as to amount of expenditures.

SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill and to prepare plans and reports relative thereto; but no more than four thousand dollars shall be expended in any one year for such special sanitary service.

482. That section ten of the same act, which reads as follows:

Section 10, act of June 3, 1885, cited for amendment.

"SECTION 10. It shall be the duty of said board on or before the first Monday of December in each year, to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state, and such report shall set forth the action of the said board and its officers and agents and the names thereof for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health, and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of five thousand dollars in any one year," be amended so as to read as follows:

Amendment as to amount of expenditures.

SECTION 10. It shall be the duty of said board, on or before the first Monday of December, in each year, to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state, and such report shall set forth the action of the said board and its officers and agents and the names thereof for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of ten thousand dollars in any one year.

BY-LAWS.

The By-Laws of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania are as follows:

Article I.

OFFICERS OF THE BOARD.

Section 1. The officers of the board shall be a president and secretary, as directed by section two of the act establishing the board.

Section 2. All elections shall be by ballot.

Article II.

DUTIES OF OFFICERS.

Section 1. The president shall preside at the meetings of the board, preserve order, and perform such other duties as custom and parliamentary usage require. He shall be *ex-officio* a member of all committees.

Section 2. The secretary shall keep the records, and conduct the correspondence of the board. He shall be custodian of all books, documents, furniture and other property belonging to the board. He shall give proper and timely notice, in writing, of every regular and called meeting, to each member of the board, and shall, as executive officer, perform such other duties as are assigned by the act establishing the board, or by these by-laws, as the board may from time to time direct. All communications from the secretary to the board shall be in writing.

Article III.

MEETINGS.

Section 1. The regular meetings of the board shall be held on the second Wednesday in May, July and November, at Harrisburg (unless otherwise ordered). At the meeting in July the election of officers shall be held. At the meeting in November the annual report shall be adopted, and at the meeting in May a public address on some sanitary topic shall be delivered.

Section 2. Special meetings shall be called by the president at such time and place as he shall designate, whenever requested in writing by three members of the board, one of whom shall be the secretary.

SECTION 3. A majority of the members of the board shall, at any regular, called or adjourned meeting, organize and constitute a quorum for the transaction of business.

ARTICLE IV.

ORDER OF BUSINESS.

SECTION 1. All meetings of the board shall be called to order at the appointed hour by the president. In the event of his absence a chairman *pro tempore* shall be appointed.

SECTION 2. At a regular meeting the business shall be conducted as follows:

1. The secretary shall register the names of the members present.
2. The minutes of the last regular meeting shall be read.
3. The minutes of special meetings held since the last regular meeting may be read, if called for.
4. Report of the secretary.
5. Reports of standing committees.
6. Reports of special committees.
7. At the meeting in July, nomination and election of president for the ensuing year; at the meeting in November, appointment of standing committees.
8. Unfinished business.
9. New business.
10. Adjournment.

SECTION 3. At special meetings the following shall be the order of business:

1. Registration of names of members present.
2. Reading of minutes.
3. Presentation of special subject.
4. Presentation of accounts.
5. Adjournment.

ARTICLE V.

REPORT OF THE SECRETARY.

The secretary shall at the meeting in November make a full report of his official acts during the year ending October 1 preceding, and accompany the same with recommendation of such measures as he shall deem necessary for the preservation of the public health and the faithful execution of the law; and this report shall constitute the basis of the report of the board to be presented to the Governor on or before the first Monday of December in each year, in accordance with the requirements of section 10 of the act constituting this board.

ARTICLE VI.

STANDING COMMITTEES.

SECTION 1. The following standing committees shall be appointed by the president of the board at the meeting in November:

1. An executive committee.
2. A committee on registration and vital statistics.
3. A committee on preventable diseases, disinfection and supervision of travel and traffic.
4. A committee on water supply, drainage, sewerage, topography and mines.
5. A committee on public institutions and school hygiene.
6. A committee on adulterations, poisons, explosives and other special sources of danger to life and limb.
7. A committee on sanitary legislation, rules and regulations.

SECTION 2. Such papers, communications or other matter received by the secretary as he may deem proper for the purpose he shall forward to the chairman of the appropriate committee, after filing the titles and memoranda, which shall be recorded in the secretary's office.

SECTION 3. All reports of committees shall be in writing.

ARTICLE VII.

FINANCES.

SECTION 1. All accounts against the board shall be filed with the secretary, and may be presented at any meeting of the board, when they shall be acted on in open session; and all accounts allowed shall be indorsed "Approved by order of the State Board of Health and Vital Statistics," and shall be indorsed by the president and secretary.

SECTION 2. The secretary shall record in a book reserved for that purpose all accounts of expenditures ordered, or made by the board and its several members, and shall before presenting any bill, account or voucher to the Auditor General, cause a copy of the same to be recorded, and shall have stamped upon such voucher, account or bill the audit and date, as the executive committee shall provide.

ARTICLE VIII.

EXECUTIVE COMMITTEE.

SECTION 1. The executive committee shall consist of not less than three members, including the secretary of the board, who shall be secretary of the committee.

SECTION 2. It shall have the general supervision of the finances, purchases, expenses and publications of the board.

SECTION 3. Its office shall be in the city of Philadelphia until otherwise ordered.

SECTION 4. It shall hold meetings at least quarterly, and as much oftener as it shall deem necessary, and shall meet on the call of the chairman.

SECTION 5. With the approval of the board or of the executive committee, the secretary shall make requisition upon the Secretary of Internal Affairs for such stationery, printed forms, clerical labor, apartments and furniture as shall be needed for the use of the board.

SECTION 6. No purchase shall be made or expenditure incurred except by order of the board or of the executive committee; and the executive committee shall not have power to incur any indebtedness beyond the amount appropriated by law.

ARTICLE IX.

RULES OF ORDER.

In conducting the business of the meetings of the board, the parliamentary rules governing the legislature of the State of Pennsylvania shall be adopted so far as they are applicable to its deliberations.

ARTICLE X.

SEAL.

The seal of the board shall be circular in shape, bearing on the circumference the words, "State Board of Health. Pennsylvania. 1885. *Salus Populi Suprema Lex,*" and in the center the coat-of-arms of the commonwealth.

ARTICLE XI.

AMENDMENTS.

These by-laws may be altered or amended at any regular meeting of the board by a two-thirds vote of the members present.

REGULATIONS OF THE BOARD.

(R. I.)

REGULATIONS IN REGARD TO THE ABATEMENT AND REMOVAL OF NUISANCES.

Whenever a complaint is made in writing to the secretary of the board of the existence of a nuisance, he shall forthwith, as executive officer of the board, investigate the matter, and shall determine whether the alleged nuisance is detrimental to the public health, or the cause of any special disease or mortality; and in case he shall so find, then he shall notify the owner, agent or occupier of said premises, in writing, of such finding, and the executive officer shall thereupon order and direct the abatement and removal of the same within ——— days; and in the event of the failure of said owner, agent or occupier of said property to abate and remove the nuisance, then the executive officer shall proceed to abate and remove the same, and shall employ all the force necessary to do so, and shall proceed, by warrant, arrest and indictment, to convict the party failing to obey said order of abatement and removal.

(R. II.)

Provisional Regulations for Preventing House-Yards, Streets, Slaughter-Houses, Stock-Yards, Hogpens, Bone-Boiling and Fat-Rendering and other Similar Establishments from being or Becoming Prejudicial to the Public Health.

NUISANCES DEFINED.

1. Whatever is dangerous to human life or health, and whatever renders soil, air, water or food impure or unwholesome, are declared to be nuisances and to be illegal; and every person having aided in creating or contributing to the same, or who may support, continue or retain any of them, shall be deemed guilty of a violation of these regulations.

HOUSE REFUSE, GARBAGE, ETC.

2. No house refuse, offal, garbage, dead animals, decaying vegetable matter, or organic waste-substance of any kind, shall be thrown upon any street, road, ditch, gutter, or public place, and no putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining out-buildings for more than twenty-four hours.

NOXIOUS TRADES.

3. No person or company shall erect or maintain any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive or deleterious odors, gas, smoke, deposit or exhalations are generated, within one mile of the limits of any city or borough, without the permit of the board of health or borough council of said city or borough, and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health, nor shall any offensive or deleterious waste substance, refuse or injurious matter be allowed to accumulate upon the premises or be thrown or allowed to run in any public waters, stream-water-course, street, road or public place. And every person or company conducting such manufacture or business shall use the best approved and all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein.

4. The business of bone and horse-boiling shall not be allowed, unless conducted under cover, the building to be provided with smoke-consumers, and a due regard be had to cleanliness in the disposition of the offal. No bone-boiling establishment or depository of dead animals shall be kept or erected in any part of this commonwealth which is not under the jurisdiction of a local board of health, without a permit from the board of health or borough council of the nearest city or borough.

5. No permit shall be granted to any person or persons to carry on the business of boiling bones and dead animals until after a careful inspection of the locality, buildings and apparatus, and of the plans for

conducting the business, by an accredited inspector of the state board of health, or, if such inspector be not accessible, then by an inspector appointed for the purpose by the board of health or borough council of the nearest city or borough.

6. No bone-boiling establishments or depositories of dead animals shall be kept or erected in or near to a thickly-inhabited neighborhood.

7. The floors of all bone-boiling establishments and depositories of dead animals shall be paved with asphalt or with brick or stone, well laid in cement, or with some other impervious material, and shall be well-drained. All such establishments shall have such an adequate water supply as will enable thorough cleanliness to be maintained.

8. The boiling of bones and dead animals, etc., shall be conducted in steam-tight kettles, boilers or caldrons, from which the foul vapors shall first be conducted through scrubbers or condensers, and then into the back part of the ash-pit of the furnace fire, to be consumed, or by other apparatus equally efficient in preventing or counteracting the offensive effluvia.

9. When bones are being dried after boiling, they shall be placed in a close chamber, through which shall be passed, by means of pipes, large volumes of fresh air, the outlet pipe terminating in the fire-pit.

10. All proprietors of bone-boiling establishments not having, on the first day of July, 1886, permits to carry on the business, and violating these regulations, shall be liable to prosecution for failing to obey this order and also to an indictment at common law for creating and maintaining a nuisance.

11. The permit clerk of each local board of health or borough council shall have provided a book in which to enter the names of all persons engaged in the business of boiling bones and having depositories of dead animals; also, the location of works and appliances as reported by the inspector, whether licensed or not, the number and date of permit, and remarks.

12. No person or persons, without the consent of the board of health or borough council of the nearest city or borough, shall build or use any slaughter house within the limits of this commonwealth; and the keeping and slaughtering of all cattle, sheep and swine, and the preparation and keeping of all meats, fish, birds or other animal food, shall be in the manner best adapted to secure and continue their wholesomeness as food; and every butcher or other person owning, leasing or occupying any place, room or building wherein any cattle, sheep or swine have been or are killed or dressed, and every person being the owner, lessee or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room or building, stable or market, to be thoroughly cleansed and purified, and all offal, blood, fat, garbage, refuse and unwholesome and offensive matter to be removed therefrom at least once in every twenty-four hours after the use

thereof for any of the purposes herein referred to, and shall also at all times keep all woodwork, save floors and counters, in any building, place or premises aforesaid, thoroughly painted or whitewashed; and the floors of such building, place or premises shall be so constructed as to prevent blood or foul liquids or washings from settling in the earth beneath.

13. No blood-pit, dung-pit, offal-pit or privy-well shall remain or be constructed within any slaughter house. Any one offending against this rule shall be guilty of creating and maintaining a nuisance prejudicial to the public health, and shall be required to remove the nuisance within ten days from the date of notice.

14. The owners, agents, or occupiers of all slaughter houses are required, during the months of June, July, August and September, to distribute twice in each week not less than twenty-five pounds of chloride of lime about the premises, and also to remove the contents of any manure-pit or manure-pile on the premises, once in each week, the said premises and contents of manure-pits being hereby declared to be nuisances prejudicial to the public health, unless subject to frequent disinfection and cleaning as herein indicated.

15. *All constables and supervisors are enjoined, and all citizens are respectfully desired,* to give information to the state board of health of any violation of the health laws, or of the regulations of the board, so that the sanitary measures adopted by the latter to ensure the health of the people may be fully carried out, and all offenders promptly punished.

NOTE—Section 6 of the act of June 3, 1885, confers upon the state board of health power and authority to *order nuisances to be abated and removed in cities, boroughs, districts and places* having no local board of health. Any person violating or failing to obey such order becomes liable, on conviction, *to a fine of one hundred dollars.*

(R. III.)

REGULATION IN REGARD TO THE SANITARY SUPERVISION OF TRAVEL AND TRAFFIC.

Upon satisfactory information of the approach to, or the transit through, the Commonwealth of Pennsylvania, of infected persons or goods, it shall be the duty of the secretary, as executive officer of the board, to cause the same to be stopped at the state line, or, if found within the limits of the state, to cause such persons or goods to be removed from cars, stages, vessels, boats or other conveyances, and securely isolated and disinfected; and he may, if, in his judgment, the emergency is such as to demand it, call a meeting of the "committee on travel and traffic," to which his action shall be submitted, with his reasons therefor, in writing. But, in cases coming under the jurisdiction of national or municipal quarantine authorities, he shall co-operate with said authorities in all such action.

(IV.)

REGULATION OF TRAVEL AND TRAFFIC.

REGULATIONS IN REGARD TO DISINTERMENT AND TRANSPORTATION OF DEAD BODIES.

Disinterment of Bodies.

RULE I. The removal of any body from its place of original interment is declared to be a nuisance dangerous to the public health, and is prohibited, unless the same be done under the direction and by permission of the local board of health or borough council.

RULE II. The above rule applies as well to the removal of a body from one grave or vault to another in the same cemetery as to its removal to another burial ground or place.

RULE III. The removal of dead bodies from any burial ground situated within the built-up portions of any city or borough is forbidden between April 1 and October 15.

RULE IV. The disinterment of the body of any person who died of any contagious or infectious disease is strictly prohibited, unless by special authority, and upon such conditions as the local board of health or borough council may impose.

Transportation of Bodies.

RULE I. The transportation of bodies of persons who shall have died from small-pox, Asiatic cholera, typhus fever or yellow fever is strictly forbidden.

RULE II. From October 15 to April 1, all other dead bodies may be transported without restriction, except those who shall have died of diphtheria, scarlet fever, typhoid fever or measles, which must be enclosed, as prescribed in Rule III.

RULE III. From April 1 to October 15, all dead bodies, when presented for transportation, must be enclosed in air-tight zinc, copper or lead-lined wooden boxes, or in air-tight iron caskets; or, if in any other form of coffin, said coffin must be in a hermetically sealed box, enclosed in a manner satisfactory to the local board of health, health officer or borough council.

RULE IV. No person or article which has been exposed to the contagion can accompany the body.

RULE V. Every dead body must be accompanied by a physician's certificate of death, and a certificate from the shipping undertaker that the body has been prepared for transportation in accordance with the rules of the State Board of Health of the Commonwealth of Pennsylvania.

RULE VI. In receiving any dead body which has been shipped from beyond or within the States of New York, New Jersey, Delaware, Maryland, West Virginia or Ohio, or in the Province of Ontario, the rules of the state or provincial boards of health of the same must be respected, and their transit permits will be honored without subjecting the body to delay, provided such rules do not conflict with any of the preceding rules in these regulations.

RULE VII. The following shall be the form of a transit permit for the transportation of a dead body within, into, or out of, the limits of the Commonwealth of Pennsylvania:

NOTE.—The rules and regulations of the state board of health are laws to be obeyed by every individual in the state.

(The size of this permit without the stub is 10x4 inches.)

TRANSIT.

[Stub to be retained by official issuing Permit.]

TRANSIT PERMIT.

1. *Issued to* ....
2. *Name of Deceased,* ....
(If a minor, give parents' name.)
....
3. *Interment at* ....
4. *Date of Death,* .... *Age,* ....
5. *Place of Death,* ....
6. *Cause of Death,* ....
7. *Certified by* ....
.... *M. D.*

FORM 7.

Commonwealth of Pennsylvania.

[To be issued by any State or Local Health Official.]

TRANSIT PERMIT. [For Public Carriers]

R. R. Agents and all other Carriers see Back of Permit

Office of .... *County.*

.... 189

Permission is hereby given to remove the remains of ....

aged ......, *who died at* ....
(City, borough, or township and county.)

on the .... *day of* .... 189 ; *the cause of death being* ... .

and a Transit Permit being asked for burial at ....

in the State of ....

(*Signed by*) ....

Name of Undertaker or person in charge of the Transit. .... (Official title.)

.... (P. O. address.)

☞ This Permit must in all cases accompany the body to its Destination.

Coupon No. 2, to Transit Permit of ....
(Name.)

.... **who died at** ....

Before this body leaves.......... the Carrier or Transportation Agent will tear off this Coupon. If otherwise detached from the permit the Coupon must not be received. (*See back of Permit.*)

Coupon No. 1, to Transit Permit of ....
(Name.)

.... **who died at** ....

Before this body leaves.......... the Carrier or Transportation Agent will tear off and keep this Coupon. If otherwise detached from the permit the Coupon must not be received. (*See back of Permit.*)

(BACK OF ABOVE PERMIT.)

☞ Railroad and Steamboat Agents, Ferry-Masters and all Carriers that convey the remains over the limits of the county where the death occurred will retain one of the Coupons hereto attached, and deliver the body only to the persons holding this permit. The name of the deceased must appear on the Coupons, which will be returnable to the city or place through or out of which the body is first conveyed, or to such authority as may be directed by the person who issued the Permit.

The **1st** *Coupon should be taken by the carrier who transports* **the** *body from the county where the death occurred and the* **2d** *should be taken by Carrier or Agent of Transportation upon the route beyond said county, and it may be so taken at either terminus of the distance over which the second stage of transportation extends, as the local sanitary regulations may require; but whoever detaches and takes said 2d Coupon must write across the back of the Permit, as well as upon the 2d Coupon itself in the space at the left of these directions, as follows:*

2d Coupon taken at .... *by* ....

Such an indorsement will answer instead of further coupons wherever the body is conveyed; and the Permit is to be surrendered at the place of burial. It, as well as every Coupon, should be preserved.

TRANSIT PERMIT.

Issued at .... *Co., Pa.*

Issued by ....

To whom issued, ...

Name of Deceased, ...

Date of Death, ...

Name of person or Carrier in charge, ...

Date of Transit, ...

2d Coupon taken at ....

by ....

SECOND COUPON. } *taken at* ....
by ....

FIRST COUPON.

(R. V.)

REGULATION IN REGARD TO THE INTERSTATE NOTIFICATION OF THE EXISTENCE OF INFECTIOUS AND CONTAGIOUS DISEASES.

The following are the resolutions adopted by the International Conference of Boards of Health, at Toronto, October 6, 1886, with slight verbal modifications:

WHEREAS, It is necessary for the protection and preservation of the public health that prompt information should be given of the existence of cholera, yellow fever or small-pox; be it *Resolved,*—

1. That it is the sense of the National Conference of State Boards of Health, that it is the duty of each state or provincial board of health within whose jurisdiction any of said diseases may occur to furnish immediate information of the existence of such disease to boards of health of neighboring states and provinces, and to local boards in such states as have no central board, in which the duty of notification shall lie upon the local boards.

2. That upon the prevalence of rumor of the existence of pestilential disease in any state or province, if positive definite information thereon be not obtainable from the proper health authorities, this conference holds that the health officials of another state are justified in entering the before-mentioned state or province for the purpose of investigating and establishing the truth or falsity of such reports.

3. That whenever practicable, the investigations undertaken under the preceding section shall be made with the co-operation of the state or local health authorities.

4. That any case which presents symptoms leading to serious suspicion of the existence of one of the aforenamed diseases shall be treated as suspicious, and reported as provided for in cases in which the diagnosis is certain.

5. That any case respecting which reputable and experienced physicians disagree as to whether the disease is or is not pestilential, shall be reported as suspicious.

6. That any suspected case respecting which efforts are made to conceal its existence, full history and true nature, shall be deemed suspicious and so reported.

7. That in accordance with the provisions of the foregoing resolutions, the boards of health of the United States and Canada represented at this conference, do pledge themselves to an interchange of information as herein provided.

I certify that the foregoing resolutions were endorsed and adopted as a regulation by the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, at a regular meeting held November 10, 1886.

BENJAMIN LEE,
Secretary.

Addendum to regulation in regard to the interstate notification of contagious and infectious diseases, adopted by the National Conference of State Boards of Health at Washington, September 8, 1887, and by the State Board of Health of Pennsylvania, November 9, 1887.

1. All communicable diseases, hereinafter mentioned, prevalent in certain areas, or which tend to spread along certain lines of travel, shall be reported to all state and provincial boards of health within said areas or along said lines of communication.

2. In the instance of small-pox, cholera, yellow fever and typhus, reports shall be at once forwarded, either by mail or telegraph, as the urgency of the case may demand.

3. In the instance of diphtheria, scarlet fever, typhoid fever, anthrax or glanders, weekly reports, when possible, shall be supplied in which shall be indicated as far as known the places implicated and the degree of prevalence.

ORGANIZATION OF THE BOARD.

STATE BOARD OF HEALTH AND VITAL STATISTICS OF THE COMMONWEALTH OF PENNSYLVANIA, 1890.

Officers and Members.

President—George G. Groff, M. D., of Lewisburg.
Secretary—Benjamin Lee, M. D., of Philadelphia.

Members.

Pemberton Dudley, M. D., 1338 North Fifteenth street, Philadelphia; Joseph F. Edwards, M. D., 224 South Sixteenth street, Philadelphia ; J. H. McClelland, M. D., 411 Penn avenue, Pittsburgh ; Howard Murphy, C. E., 326 Walnut street, Philadelphia ; George G. Groff, M. D., Bucknell University, Lewisburg; Hon. Samuel T. Davis, M. D., 134 North Prince street, Lancaster; Benjamin Lee, M. D., 1532 Pine street, Philadelphia.

Place of Meeting—Supreme Court Room, State Capitol, Harrisburg (unless otherwise ordered). *Janitor*—John Harner, 1417 North Third street, Harrisburg.

Time of Meeting—Second Wednesday in May, July and November, at 4 p. m.

Standing Committees.

I. *Executive Committee*—Pemberton Dudley, M. D., chairman, Howard Murphy, C. E., Joseph F. Edwards, M. D., and Benjamin Lee, M. D., secretary. Place of meeting: Executive office, 1532 Pine street, Philadelphia. Secretary's address: 1532 Pine street, Philadelphia.

II. *Committee on Registration and Vital Statistics*—Dr. Benjamin Lee and Dr. Samuel T. Davis. Bureau of Registration of Vital Statistics: Department of Internal Affairs, State Capitol, Harrisburg. State Superintendent of Registration of Vital Statistics: Benjamin Lee, M. D. Registrars of Marriages: All clerks of orphans' courts. Registrars of Practitioners of Medicine and Sugery: All prothonotaries.

III. *Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic*—Dr. Joseph F. Edwards and Dr. Pemberton Dudley.

IV. *Committee on Water Supply, Drainage, Sewerage, Topography and Mines*—Mr. Howard Murphy, C. E., and Dr. J. H. McClelland.

V. *Committee on Public Institutions and School Hygiene*—Dr. J. H. McClelland and Mr. Howard Murphy, C. E.

VI. *Committee on Adulterations, Poisons, Explosives and other Special Sources of Danger to Life and Limb*—Dr. Pemberton Dudley and Dr. Joseph F. Edwards.

VII. *Committee on Sanitary Legislation, Rules and Regulations*—Dr. Samuel T. Davis and Dr. Pemberton Dudley.

The president is a member *ex-officio* of all committees.

Medical Inspectors of the Board.

DISTRICTS.	COUNTIES.	INSPECTORS.
Delaware, ...	Philadelphia, Delaware, Chester, Montgomery and Bucks, . . .	Dr. W. B. Atkinson, Philadelphia.
Lehigh, ...	Lehigh, Northampton, Carbon and Monroe, . . .	Dr. Chas. McIntire, Jr., Easton.
Wyoming, ...	Luzerne, Wyoming, Pike, Lackawanna, Wayne and Susquehanna,	Dr. L. H. Taylor, Wilkes-Barre.
Susquehanna, . .	Lancaster, York and Dauphin, . . .	Dr. P. A. Hartman, Harrisburg.
Schuylkill, . . .	Berks, Lebanon and Schuylkill, . .	Dr. W. Murray Weidman, Reading.
Northumberland,	Northumberland, Union, Snyder, Montrose and Columbia, . . .	Dr. Wm. Leiser, Jr., Lewisburg.
Lycoming, . . .	Lycoming, Tioga, Potter, Bradford and Sullivan, ...	Dr. E. D. Payne, Towanda.
Cumberland, . .	Cumberland, Adams, Franklin and Perry, ...	Dr. R. L. Sibbet, Carlisle.
Juniata, ...	Juniata, Mifflin and Huntingdon, .	Dr. A. B. Brumbaugh, Huntingdon.
Central, ...	Centre, Clearfield, Clinton and Blair,	Dr. C. D. Dudley, Altoona.
Western Slope, .	Jefferson, Elk, Cameron, McKean and Clarion, ...	Dr. Spencer M. Free, Beechtree.
Southern Tier, .	Fulton, Bedford, Somerset and Fayette, ...	Dr. C. L. Gummert, Brownsville.
Allegheny, . . .	Allegheny, Washington, Greene, Butler, Beaver and Lawrence, .	Dr. J. R. Thompson, Pittsburgh.
Lake, ...	Erie, Crawford, Warren, Mercer, Venango and Forest, . . .	Dr. J. L. Stewart, Erie.
Conemaugh, . .	Cambria, Westmoreland, Indiana and Armstrong, ...	Dr. W. E. Matthews, Johnstown.

APPENDIX O.

ADDITIONS TO LIBRARY.

LIST OF BOOKS RECEIVED FROM NOVEMBER 7, 1889, TO NOVEMBER 13, 1890, BY GIFT OR EXCHANGE.

Forty-seventh Registration Report of Massachusetts for 1888.

Fourth Report of the State Board of Health of Maine.

Ninth Annual Report of the State Board of Health of New York.

Report of Public Health in Dublin, Ireland, for 1888.

Eighth Biennial Report, ending December 31, 1889, of the State Board of Health of Maryland.

Fourth Report of the Ohio State Board of Health (8 copies).

Report of the proceedings of the Illinois State Board of Health (8 copies).

Abstract of Weekly Sanitary Reports for 1889, by M. H. Service, Washington, D. C.

Tenth Annual Report for 1887 of the State Board of Health of Illinois (6 copies).

Manual Engineering News, 1888.

Eighth Report of the State Board of New Hampshire, ending October, 1889.

Twenty-third Annual Report of the Health Department of the city of Cincinnati, ending December 31, 1889.

Thirteenth Annual Report of the State Board of Health of New Jersey, 1889.

Report on the Health of the City of Birmingham, England, for year, 1889.

Fifth Annual Report of the Kansas State Board of Health for 1889 (3 copies).

Transactions of the American Orthopedic Association, Vol. II.

Eighth Annual Report of the Indiana State Board of Health for 1889.

Annual Report of the State Board of Health of Missouri for 1888 (2 copies).

Ninth Annual Report of Registration and Return of Births, Marriages, Divorces and Deaths in New Hampshire for 1888.

Report of the State Board of Agriculture of Pennsylvania for 1889.

Report of the State Board of Health of Alabama for 1888.

Twelfth Annual Report of the State Board of Health of Connecticut for 1889 (4 copies).

Report on Animal Parasites of Sheep, State Board of Agriculture of Pennsylvania.

Fifth Annual Report of the State Board of Health of Maine for 1889 (2 copies).

Tenth Annual Report of the State Board of Health of South Carolina.

Annual Report of Bureau of Health of Pittsburgh for 1889.

Second Annual Report of the Department of Public Safety of Pittsburgh.

Twelfth Annual Report of the State Board of Health of Rhode Island (6 copies).

Tenth Annual Report of the State Board of Health of New York.

Eighth Annual Report of the State Board of Health of New York.

Report of the State Board of Health of Maryland.

First Annual Report of the State Pharmaceutical Examining Board of Pennsylvania (25 copies).

Eighth Annual Report of the Provincial Board of Health of Ontario, Canada, 1889 (2 copies).

Thirteenth Annual Report of the Health Commissioners of St. Louis, Missouri.

Twenty-first Annual Report of the State Board of Health of Massachusetts (2 copies).

LIST OF PAMPHLETS RECEIVED FROM NOVEMBER 7, 1889, TO NOVEMBER 13, 1890, BY GIFT OR EXCHANGE.

Proceedings and Papers of a State Sanitary Convention held at Tecumseh, Michigan.

Report of the Institute of Homeopathy for 1889.

Report of a State Sanitary Convention held at Leddington, Michigan.

Sanitary Condition of Watch Hill, R. I.

Essays de Geographia Medica Y. Climatologia.

Sanitary Entombment.

Transactions of the Maine State Medical Society for 1889.

Venereal Disease among Horses in the County of Kent, Ontario, Canada.

Annual Report of the Local Board of Health of Toronto, Canada.

Eleventh Annual Report of the Local Board of Health of Titusville, Pa.

Proceedings of the Connecticut Medical Society for 1889.

A Popular Treatise on the Extent and Character of Food Adulterations, by Alexander J. Wedderburn.

Report of the Fourth Annual Meeting of the Association of Executive Health Officers of Ontario, Canada.

Annual Report of the Health Department of the city of Baltimore, Md., 1889.

Fourth and Fifth Annual Reports, Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

Reports of State Sanitary Conventions at Vicksburg and Pontiac, Michigan (4 copies).

Quarantine and Public Health Report for 1889, Ottawa, Canada.

Annual Report of the Trustees of the State Hospital for the Insane, Warren, Pa.

First Annual Report of the Board of Health of Portland, Maine.

Annual Report of Managers of the Sanitarium Association of Philadelphia, 1889.

On Fresh Water, and the Purity of Public Water Supplies, by George W. Rafter, C. E.

Report for 1888 of the Registrar-General of England of Births, Deaths and Marriages.

Annual Report of the Toledo Board of Health for 1889.

Annual Report of the Scranton, Pa., Board of Health for 1889.

Annual Report of the Board of Health of Reading, Pa., 1889 (3 copies).

Copy of contract and specifications for construction of fumigating steamer for United States Marine Hospital Service.

Report of the Dairy Commissioner of New Jersey for 1889.

Fifth Annual Report of the Board of Health of Newark, N. J., for 1889 (2 copies).

Journal of the Elisha Mitchell Scientific Society for 1889.

Seventy-third Annual Report of Managers of Friends' Asylum for the Insane, Philadelphia.

Report on Mid-Warwickshire, England, Sanitary District for 1889.

Sixtieth Report of the Eastern Penitentiary Inspectors of Philadelphia.

The Purification of Water by means of Metallic Iron, by Easton Devonshire, C. E.

Annual Report of the Board of Health of Newton, Mass., for 1888.

Ordinance Prohibiting the Sale of Impure Milk in Philadelphia (20 copies).

Rules and Regulations for the Goverment of Superintendents of Burial Grounds, Sextons, Undertakers, etc., in Philadelphia (12 copies).

The Medical and Dental Register Directory and Intelligencer of Pennsylvania and Delaware, by William B. Atkinson, M. D.

Fourth Annual Report of the Board of Health of Keokuk, Iowa.

Report of Board of Managers of Pennsylvania Hospital.

Model By-Laws (22) issued by the Local Government Board, England, to Local Boards in England.

Twenty-fourth Annual Report of the Homeopathic Medical and Surgical Hospital and Dispensary of Pittsburgh, 1890,

Thirty-seventh Annual Report of the Pennsylvania Training School for Feeble-Minded Children, Elwyn, Delaware county.

Report of Secretary of Johnstown Flood Relief Commission.

Manual for the use of Boards of Health.in Massachusetts.

A Health Code for Towns and Villages in Maryland.

Report of Local Boards of Health in the State of New York (2 copies).

Technical Catalogue and Directory of the Massachusetts Medical Society.

Journal of the Elisha Mitchell Scientific Society, 1890.

Report of Endemic of Typhoid Fever at Springwater, N. Y.

Biological Examination of Potable Water, by George W. Rafter, N. Y.

The Chancellor Sewage Apparatus for household sewage.

Abstract of the Health Laws of the State of Maine, by State Board of Health of Maine.

LIST OF BOOKS PURCHASED FROM NOVEMBER 7, 1889, TO NOVEMBER 13, 1890.

Story of the Bacteria,	$0 75
Adams' Sewers and Drains,	2 50
Dempsey's Drainage,	3 00
Gerhard's House Drainage,	50
Slaggs' Sanitary Work,	1 20
Tidys' Treatment of Sewage,	50
Waring's Sewage and Land Drainage,	6 00
Zehfuss' Pneumatic System,	50
Crimp's Sewage Disposal,	7 50
Slater's Sewage Treatment,	2 25
Sir Robt. Rawlinson's Public Health,	1 20
Official Text-book and Lexicon (for Funeral Directors),	5 00
A Glimpse at the Indian Mission Field and Leper Asylum—Leprosy an Imperial Danger—Leprosy—Leprosy and its Story, Segregation its Remedy,	3 50

MEDICAL AND SANITARY PERIODICALS RECEIVED FROM NOVEMBER 7, 1889, TO NOVEMBER 13, 1890.

Abstract of Sanitary Reports. Published at the Marine Hospital Bureau, Washington, D. C. Free. Weekly.

Annals of Hygiene. Published by Sanitary Publishing Company. Free. Monthly.

The Monthly Bulletin. A Record of Sanitary Progress, Public Health and Mortality. Rhode Island State Board of Health. Monthly. Free.

Bulletin of the North Carolina State Board of Health. Monthly. Free.

Public Health in Minnesota. Minnesota State Board of Health. Monthly. Free.

State Board of Health Bulletin of Tennessee. Monthly. Free.

The Sanitary Inspector. State Board of Health of Maine. Monthly. Free.

Monthly Bulletin of the Iowa State Board of Health. Free.

The Monthly Sanitary Record. Ohio State Board of Health. Free.

Journal D'Hygiène Populaire. Conseil. Provincial d' Hygiène et da la Société d' Hygiène de la Province de Québec. Free.

The Medical and Surgical Reporter. Weekly. Free.

New England Medical Monthly. Free.

Lehigh Valley Medical Magazine. Monthly. Free.

The Sanitary News. Weekly. By subscription.

The Journal of the American Medical Association. Weekly. By subscription.

The Medico-Legal Journal. Monthly. By subscription.

The Journal of Comparative Medicine and Veterinary Archives. Monthly. By subscription.

The Sanitarian. Monthly. By subscription.

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